OBSTETRIC NURSING

FULLERTON

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FULLERTON.

BY THE SAME AUTHOR.

NURSING IN

ABDOMINAL SURGERY

AND

DISEASES OF WOMEN.

SECOND EDITION, REVISED.

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A HANDBOOK

OF

OBSTETRIC NURSING

FOR

NURSES, STUDENTS, AND MOTHERS.

COMPRISING THE COURSE OF INSTRUCTION IN OBSTETRIC NURSING GIVEN TO THE PUPILS OF THE TRAINING SCHOOL FOR NURSES CONNECTED WITH THE WOMAN'S HOSPITAL OF PHILADELPHIA.

BY

ANNA M. FULLERTON, M.D.,

OBSTETRICIAN, GYNECOLOGIST, AND SURGEON TO THE WOMAN'S HOSPITAL OF PHILADELPHIA, AND FORMERLY PHYSICIAN-IN-CHARGE AND SUPERINTENDENT OF ITS NURSE SCHOOL; CLINICAL PROFESSOR OF GYNECOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA.

FIFTH REVISED EDITION. ILLUSTRATED.

PHILADELPHIA:

P. BLAKISTON'S SON & CO.,

1012 WALNUT STREET.

1899.

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THIS LITTLE BOOK

IS DEDICATED

TO

Dr. Anna E. Broomall,

PROFESSOR OF OBSTETRICS IN THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA,

IN APPRECIATION OF

HER ABLE AND FAITHFUL WORK

AS A TEACHER.

PREFACE TO FIFTH EDITION.

The excellent results to be attained by an adherence to the methods advocated in this little book, and observed in the obstetric work of the Woman's Hospital, will prove the value of *cleanliness, antisepsis, and eternal vigilance* on the part of the nurse, in averting the dangers of childbirth, and reducing the mortality of early infancy. In the fifth, as in former editions of my work, I have made every effort to bring its teachings up to the requirements of modern practice. An especial effort has been made to consider in detail the needs of the young infant whose hold on life in the earlier days of its existence is slender. The latest and most approved methods in the application of disinfectants and antiseptics to obstetric practice have been supplied in this revision of the work, as many other points marking the progress of the science of nursing.

The grave responsibilities so often thrown upon the trained nurse necessitate a most thorough knowledge

upon her part of the conditions she may be called upon to manage. It is for her chiefly that this little book has been written.

The importance, however, of a thorough understanding of the many little details of scientific nursing on the part of the physician, leads me to trust that the work may be of value to physician as well as nurse; and since both of these must have the entire support, sympathy, and assistance of the patient in their efforts for her well-being, the directions herein given as to preparations to be made, and rules of action to be observed, will, it is hoped, enable the patient to work in harmony with those who are working for her good.

ANNA M. FULLERTON.

123 S. 16th St., Philadelphia.
February 9, 1899.

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OBSTETRIC NURSING.

CHAPTER I.

THE PELVIS AND GENITAL ORGANS.

The Pelvis is that part of the skeleton found between the lower end of the spinal column and the thigh bones. It consists of four bones—the sacrum, the coccyx, and the right and left innominate or hip bones. These bones form a canal through which the child passes during labor.

Measurements, or Diameters, are taken from certain parts of the pelvis to determine the capacity of this canal. It is important that every pregnant woman should have her pelvis measured by the physician whom she expects to have attend her in labor, in order that it may be discovered whether her pelvis is at all under size, so that special precautions may be taken in time to prevent difficulty in the delivery. These measurements should be taken not later than the seventh month of pregnancy, as it may be desirable, for the sake of both mother and child, that the physician should induce premature labor.

The Canal of the Pelvis contains the internal organs

of generation—viz., the uterus, Fallopian tubes, and ovaries; and the bladder and rectum besides.

The External Organs are called the "pudenda," or "vulva."

Immediately above the pubic bone, or anterior border of the pelvis, is a cushion of fat, usually covered with hair. This is called the "mons veneris." On each side of

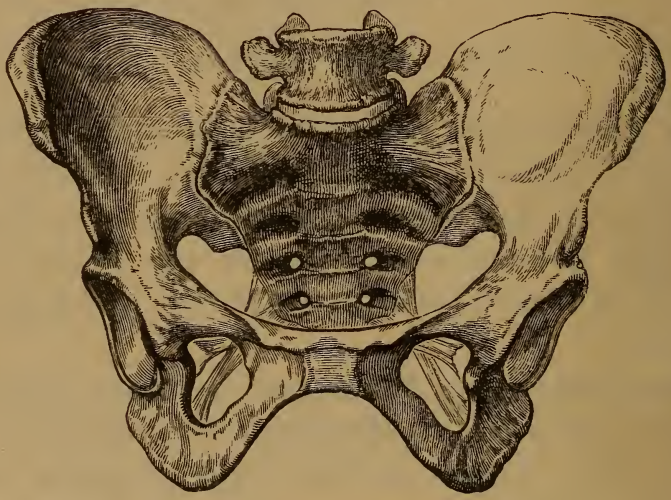

FIG. 1.—NORMAL PELVIS.

the opening of the vulva are the "labia majora," or large lips. Lying beneath these and concealed by them, in young women, are two thin folds of flesh, named the "labia minora," or "nymphæ." They join together above, and at their junction is a small projecting body called the "clitoris." The small triangular space between the clitoris and the nymphæ is the "vestibule."

The opening of the urethra (the "meatus urinarius"),

through which the urine escapes from the bladder, is in the middle of the lower border of the vestibule. It is very important that the nurse should know the exact

FIG. 2.—EXTERNAL GENITALIA.

1. The right labium majorum. 2. The fourchette. 3. Right nympha. 4. Clitoris. 5. Urethral orifice. 6. Vestibule. 7. Orifice of vagina. 8, 8. Hymen. 9. Orifice of duct of vulvo-vaginal gland. 10. Mons veneris. 11. Anal orifice.

position of the meatus urinarius, as she will frequently be called upon to pass the catheter.

Below the vestibule is the orifice of the "vagina," the canal leading to the uterus, or womb. In virgins a deli-

cate membrane, usually crescentic in shape, blocks the entrance to the vagina. This is the "hymen."

The hymen is usually ruptured at marriage, but a woman may be a virgin yet have no hymen; in some cases it persists even after marriage, and offers an obstruction at childbirth. A woman who has borne children has a few fleshy projections at the orifice of the vagina, the only remains of the hymen, called the "carunculæ myrtiformes." Between the vulva and the anus is a mass of flesh, the space on the surface measuring one and one-half inches in length. During the birth of the child this becomes greatly distended, and thins like rubber. This is the "perineum." It may be torn during labor to a greater or less extent; sometimes it is completely torn into the bowel. That part of the perineum in the virgin which forms the posterior border of the vulva is called the "fourchette." It is merely a fold of skin, and is almost always torn in a first labor. Behind the perineum is the "anus," or orifice of the rectum, the lower part of the bowel.

The Vagina is a canal connecting the external with the internal organs of generation. The uterus is at the top of the vagina. In front of the uterus is the bladder, and behind and to the left the rectum.

A secretion of mucus keeps the vagina moist. There should, however, be no discharge in a perfectly healthy woman. During pregnancy, and as a result of ill health or local inflammation, the natural secretion may be greatly increased, and the patient is then said to have

"the whites." In labor the discharge is very greatly increased, so as to aid the birth of the child.

The Uterus is a pear-shaped organ, three inches in length, one and one-half inches in breadth, and about one inch in thickness. It weighs a little over an ounce in its normal condition in a virgin. After child-bearing it remains larger and heavier than before. That portion of the uterus which communicates with the vagina is

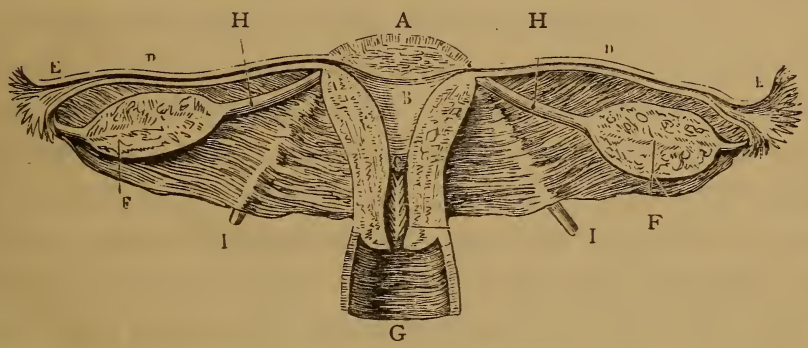

FIG. 3.—CAVITY OF THE UTERUS AND FALLOPIAN TUBES.

A. Superior border of fundus of womb. B. Cavity of the womb. C. Cavity of the neck of the womb. D, D. Canal of the Fallopian tube. E, E. The fimbriated extremities. F, F. The ovaries. G. The cavity of the vagina. H, H. The ovarian ligaments. I, I. The round ligaments.

called the "neck, or cervix." The chief portion of the organ above this is called the body, and the rounded upper surface the fundus. The opening in the cervix which communicates with the vagina is called the "os uteri." That portion of the cervix in front of the os uteri is the anterior lip, while that part which lies behind is the posterior lip.

The Fallopian Tubes are two canals which pass

from each side of the upper portion of the uterus. They are from three to four and one-half inches long, and will admit the passage of a bristle. Each ends in a trumpet-shaped opening surrounded by a fringe of small projections called "fimbriæ." This is called the fimbriated extremity. When the ovum (or egg) escapes from the ovary, it is received by the Fallopian tube and reaches the cavity of the uterus in this way.

The Ovaries are two small flattened bodies about an inch long and half an inch thick. They lie about an inch from the fundus of the uterus on each side, in the folds of the broad ligament. The broad ligaments are folds of peritoneum, a thin glistening membrane which covers the uterus and all the pelvic organs, and by means of which the uterus is suspended in the pelvis. The bladder and rectum being covered with the same tissue, there is an intimate connection between the three, so that if one is deranged the others are likely to be also.

The Breasts are considered as belonging to the external organs of generation. They are two glands situated on the front of the chest, one on each side of the breast-bone. They vary in size and shape in different women, and during pregnancy they enlarge greatly. They secrete milk for the nourishment of the child. The nipple at the apex of the gland is a conical-shaped projection. The milk ducts all come toward it from the different parts of the breast and open on its surface. The areola is a pink or brown circle which surrounds the nipple.

There is an intimate connection between the breasts and the uterus. Pain in the breast may be the result of disease of the uterus. The secretion of milk is called "lactation."

Menstruation is a bloody discharge from the uterus every month. It begins usually about the age of fourteen and recurs every month, except during pregnancy or while a woman is nursing. There are occasional exceptions to this rule. It ceases at the change of life, or menopause (usually between forty-five and fifty).

At puberty—that is, when this function first appears—the girl becomes a woman, the breasts enlarge, and the pelvis increases in size. The organs of generation become ready to perform the functions of reproduction. The menstrual flow recurs every twenty-eight days and lasts about four days. The quantity of blood lost at a period is from four to eight ounces. Different women vary much in this respect. The discharge is blood mixed with mucus. Its color is dark red. Any peculiarity in color, or the appearance of any clots in the discharge, will need to be noticed by the nurse and the discharge kept for the doctor's inspection. There is usually a feeling of discomfort at the menstrual period, with headache, pains in the back, breasts, etc. These symptoms are more severe in some women than in others. The periodic congestion of the uterus, which results in the production of the menstrual flow, is probably associated with the ripening of the ova or eggs in the ovaries. It has been found, however, that the ova

may escape from the ovaries and be carried into the uterus through the Fallopian tubes independently of menstruation. The ova that do not become impregnated are simply carried away by the natural discharge.

Conception most usually takes place immediately or very soon after a period. This is not an invariable rule, as women have become pregnant before menstruation has been established, or even after the menopause. They may also become pregnant while nursing. The principal disorders of menstruation are:

Dysmenorrhea, or painful menstruation;

Menorrhagia, or excessive flow at the period;

Amenorrhea, or suppression of the menstrual flow: and

Metrorrhagia, the occurrence of hemorrhage between the menstrual periods.

The causes of these disorders are very numerous and must be determined by a physician.

A nurse is so often questioned on these points that it is well for her to have information concerning them. Always endeavoring to discourage the inquisitiveness of mere prurient curiosity, she should aim to give wise counsel concerning matters of which her patient may hesitate to speak to her physician. In doing so the nurse should, however, speak to the physician of any matters of importance concerning the condition of the patient which she may thus learn, and ask his counsel as to the advice she should give.

CHAPTER II.

SIGNS OF PREGNANCY.

The Signs of Pregnancy may be divided into three classes: the suspicious, the probable, and the certain.

Under the head of *suspicious* signs may be classed the many nervous sensations which are apt to accompany early pregnancy; as, general discomfort, sudden changes of temperature, headache, toothache, giddiness, faintness, changes in disposition, perverted appetite, etc.

Of the *probable* signs one of the earliest and most constant is the *stoppage of the monthly flow* in a person who has been regular. This may be, however, caused by other conditions than pregnancy. Thus, change in one's mode of living, a new climate, or general ill health may produce the same result. In the early months of marriage we may also have an irregularity in menstruation where there is no pregnancy. On the other hand, in rare instances, we may have the monthly flow persisting for some months or throughout the entire pregnancy. It is then generally scanty and short in duration.

A *deepening in the color of the vagina and vulva*, by which they take on a purplish hue, is another sign, and

is caused by the enlargement of the blood-vessels and a stoppage of the circulation, due to pressure from the enlargement of the uterus. This coloration may be caused to some extent by tumors.

Increase in the size of the breasts occurs in the early months of pregnancy with a deposit of coloring matter in the areola, or ring which surrounds the nipple. Some of this coloring matter seems to extend irregularly over the outer margin of the ring, and is called the "secondary areola" or "areola of Montgomery." With this distention of the breasts there is also a secretion found in them—a watery fluid, sometimes yellowish in color, known as "colostrum," which appears about the third month.

Temporary distention of the breasts, with the accumulation of this secretion, may occur in a slighter degree as an accompaniment of menstruation, or it may persist for a long time after a woman has stopped nursing her infant.

Enlargement of the abdomen, which begins about the end of the third month of pregnancy, is another important sign. Yet this may also be caused by tumors, or by flatulence, or the deposit of fat in the abdominal walls.

Marks upon the abdomen, due to the rapid stretching of the skin, sometimes occur in great numbers, and are called "*striæ*," owing to the fact of their resemblance to the marks left by whip-lashes. These marks sometimes extend down upon the thighs. This, too, may be

caused by tumors. The "brown line" of pregnancy is the deposit of pigment in the median line of the abdomen. This may exist when there is no pregnancy, as also may the peculiar browning of the skin found in irregular patches over the face, particularly on the forehead, and called the "mask of pregnancy."

"*Morning Sickness*," another sign, begins early in the second month or at the time of the first missed period. It is generally confined to the first three months, and is largely a nervous symptom. It varies much, however, in degree and time of occurrence. Sometimes it is simply a slight feeling of sickness at the stomach occurring early in the morning; again, it may persist throughout the entire day, or it may occur one day and not again for several days. Sometimes it continues throughout the entire pregnancy, and is then dangerous because of the constant loss of food. Sometimes it occurs early in the pregnancy, then disappears to reappear in the last month, when there is direct pressure upon the stomach.

"*Quickening*"—or the appreciation of the movements of the child by the mother—is another probable sign, and is first experienced about the middle of pregnancy. A woman who has previously borne children feels this sensation about two weeks earlier than one pregnant for the first time.

There are other probable signs of pregnancy which would come only under the observation of the physician. As they require considerable knowledge of obstetrics,

and skill in the conducting of an examination for the discovery of pregnancy, we will not do more than refer to them here. *Hegar's sign* is the softening of the lower portion of the posterior wall of the uterus, and the increase of the antero-posterior diameter of that organ, as discovered by what is known as bi-manual palpation —one finger of the examiner resting over the posterior wall of the uterus through the rectum, while the other hand makes pressure over the lower part of the abdomen.

Another sign is that afforded by the thermometer, when its bulb is carried within the cervical canal. If pregnancy exist, the *temperature* is said to be from a half to one degree higher than in the vagina.

The *pulse* of a pregnant woman is said also to show less variation from change in position than that which occurs in the non-pregnant state. Thus, the change from lying to sitting or standing does not cause a quickening, such as is usually observed in the non-pregnant state.

The *uterine souffle* is a blowing sound which is supposed to occur in consequence of the enlargement of the blood-vessels of the uterus, and which, therefore, corresponds in its rhythm with the radial pulse of the patient. This must not be confounded with the *funic souffle*, a blowing sound which sometimes occurs in the vessels of the cord, and which is synchronous with the fetal pulse, therefore about twice as rapid as the mother's pulse.

When the uterus is large enough to be felt through the abdominal walls, palpation over it is apt to cause a *contraction*, which is indicated by a temporary hardening. This is another indication of pregnancy.

The *positive* signs of pregnancy as agreed upon by most obstetricians are but two: the direct appreciation of the parts of the child by touch, and the "fetal pulse," or heart sounds of the child. The "fetal pulse" is, as a rule, twice as fast as the pulse of the mother. It is hardly strong enough to be heard, even by experienced ears, much before the 5th month—or end of the 20th week; rarely heard well before the 24th week.

Methods of Determining Date of Confinement.—The ordinary method of reckoning the probable date of confinement is as follows: Learn on what day the last monthly flow began, then count three months backward (or nine months forward) and add seven days. For example, say that a woman was unwell last on March 15: counting three months back gives December 15; add seven days, and we have December 22 as the probable date of her confinement. All methods of reckoning are only approximate. It is best to consider the date calculated as the middle of a period of two weeks, within which labor may occur at any time. When, for any reason, it is impossible to make the calculation by this method, it may be computed by adding four and a half months to the date of quickening in the case of a woman pregnant for the first time, and five

months in the case of one who has previously borne children.

The third method, that of adding forty weeks, or ten lunar months, to the date of conception, is too uncertain to be of much practical use. Examination of the patient by an intelligent physician who knows and appreciates the distinctive signs of the several months offers a fourth method of computing the date of pregnancy.

Numerous tables for a rapid computation of the date of confinement have been made. The accompanying table is one much used. By taking the upper figure in each pair of horizontal lines as representing the date of the first day of the last menstrual period, the figure immediately beneath it will represent the probable date of confinement.

TABLE FOR CALCULATING THE PROBABLE DATE OF LABOR.

Jan. . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Oct. . . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	*Nov.*
Feb. . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	...	...	...	
Nov. . . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	...	...	...	*Dec.*
March . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Dec. . . .	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	*Jan.*
April . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	...	
Jan. . . .	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	...	*Feb.*
May . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Feb. . . .	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	*March.*
June . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	...	
March . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	...	*April.*
July . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
April . .	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	*May.*
Aug. . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
May . . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	*June.*
Sept. . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	...	
June . . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	...	*July.*
Oct. . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
July . . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	*Aug.*
Nov. . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	...	
Aug. . . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	...	*Sept.*
Dec. . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Sept. . . .	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	*Oct.*

EXPLANATION.—Find in top line the date of menstruation, the figure below will indicate the date when confinement may be expected; *i. e.*, if date of menstruation is June 1st, confinement may be expected on March 8th, or one day earlier if leap year.

CHAPTER III.

MANAGEMENT OF PREGNANCY.

The management of pregnancy consists, for the most part, in greater attention to the laws of health. The increased activity of all the organs of the body, together with the disturbances caused by pressure, necessitates this.

Constipation is an almost invariable accompaniment of pregnancy. In the early months it is a sympathetic condition; later, the effect of direct pressure upon the bowels. It is also, undoubtedly, in part due to the want of exercise.

The treatment of constipation is the same as in other conditions, except that only mild laxatives are used. Regularity in attention to the bowels, a glass of cold water at night and again in the morning, liquids (either milk or water), not taken with the meals, but in the intervals, a teaspoonful of common salt in the water occasionally, the use of uncooked fruit and coarse bread, the avoidance of starches and fine flour—all these are helpful in overcoming this condition. There is an objection to the use of sugared fruits, as confections of fruit, senna leaves, etc., because of their liability to disturb

the stomach. Prunes are, perhaps, the least objectionable; licorice powder, because of the senna which it contains, is apt to cause griping pains. Rhubarb is, perhaps, the best of the mild laxatives. A small piece of rhubarb root, the size of a pea, may be taken at night, followed by a glass of water. If there is an objection to its taste, it may be taken in pill form. Cascara sagrada is also useful.

Cream of tartar, a half a teaspoonful being taken at night in a cup of cold water, is often efficient. In some cases it may be necessary to repeat the dose in the morning.

Massage of the abdomen, so efficient in the management of constipation, should never be resorted to in the pregnant state, as it is apt to excite uterine contractions and may lead to miscarriage. There is an objection to the too frequent use of enemata on the same ground; also, the habit is thus acquired of depending upon this stimulus, and overdistention of the bowel is the result. It may be necessary, however, occasionally to alternate an enema with a laxative, especially when the patient suffers from piles.

Diarrhea is rather a rare disturbance of pregnancy, but it sometimes occurs as a direct result of constipation—small, hardened masses forming in the bowel, known as "scybala," which produce an irritation of the mucous lining. The use of rhubarb night and morning, in the manner described above, until all the masses are removed from the bowels, will serve to check the

diarrhea. Should the condition be due to other causes, as indigestion, etc., appropriate remedies will have to be prescribed by a physician.

Changes in the Urinary Organs are mainly due to direct pressure. In the first three months of pregnancy there is direct pressure on the bladder, hence great irritation, due to interference with the distention of the bladder, producing a *constant desire* to pass water. For this the recumbent position is the only help. The uterus rises in the abdomen at the end of the third month, and the bladder being thus relieved from pressure, this symptom passes away.

The tendency from the fourth to the ninth month is to the *accumulation of urine*, because there is less than the proper irritability of the bladder, the organ being flattened between the uterus and the abdominal walls, and its walls thereby suffering a partial paralysis.

In the last month there is *incontinence of urine*, because the pressure is so great that there is no room for the accumulation of urine.

During labor there is pressure upon the neck of the bladder and urethra, leading to *retention*. This may exist for the last two weeks of pregnancy. Necessity for the use of the catheter is confined, as a rule, to this period. The distention of the bladder may impede labor. With the drawing up of the uterus the bladder is drawn up and the urethra elongated, hence the use of the long rubber catheter, known as the English catheter, will be necessary. Nos. 8 and 9 are those ordinarily used.

Sometimes irritability of the bladder is due to *excessive acidity* of the urine. A physician will generally prescribe some alkali to overcome this condition, as a drop of liquor potassa in a tablespoonful of milk once in three or four hours, or the use of mucilaginous drinks, as flaxseed tea, barley water, milk, etc., may relieve the distress.

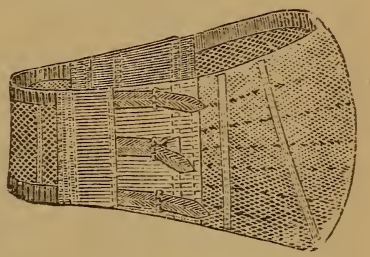

FIG. 4.—ABDOMINAL BELT.

When the abdominal walls are much stretched and the uterus falls upon the bladder, this may be remedied by the use of the binder or an abdominal supporter.

Incontinence of Urine leads to the *excoriation* and reddening of the parts about the vulva. Frequent washing with warm water and borax or pure Castile soap relieves the irritation. Diachylon or zinc ointment is best when an ointment is needed.

Incontinence is sometimes the result of overdistention of the bladder. Here the use of the catheter is indicated.

A nurse, unless thoroughly experienced, should never attempt to pass the catheter in the case of a pregnant woman, as serious injury may be done to the soft parts in a bungling attempt. In all cases she should have the sanction of the physician before so doing.

The Kidneys are especially subjected to pressure from the seventh to the ninth month of pregnancy. A

passive congestion is thus produced, which may lead to the occurrence of albuminuria, or albumin in the urine. This is an evidence of a drain upon the blood which the physician needs to watch very carefully. It is customary, therefore, for physicians to examine the urine of patients whom they expect to attend at least once a week, from the seventh month on to the termination of pregnancy.

Examination of Urine.—The urine to be obtained on first emptying the bladder in the morning, and before breakfast, if possible, is the most satisfactory for examination. When a small quantity of albumin is present in urine, it is often increased after a meal. The same is true of sugar. A specimen obtained by the use of the catheter is the best for the purpose, if the patient be troubled by a discharge from the vagina.

It is important also to note the amount of urine passed daily during pregnancy. The nurse in attendance upon a patient who is awaiting her delivery should make a *daily record* of the *amount* passed, to keep the physician informed as to the work done by the kidneys.

The average quantity of urine excreted in twenty-four hours in health during the non-pregnant state is about three pints, or fifty ounces. A clean vessel, set aside for the patient's exclusive use, should be used by her each time that the bladder needs to be emptied during the entire twenty-four hours. The nurse then measures the amount, using for the purpose a graduate set aside for the work, or some other vessel of known capacity.

The *color* of the urine will need to be noted by the nurse in her record. The natural color is clear, pale yellow, or amber. Substances taken by the patient, as food or medicine, or conditions of disease may cause the color to vary, or render the urine turbid.

There is a natural increase in the amount of urine passed by a pregnant woman, but the increase is mainly in the water. Therefore the urine will be lighter colored than usual.

The *reaction* of the urine should be acid. Small strips of blue and pink litmus-paper (that is, paper colored by a delicate coloring matter known as litmus) should be kept on hand for the purpose of testing the urine while fresh. When a strip of the blue litmus-paper dipped into the urine turns pink, we know the urine is acid; when the pink paper is made to turn blue, the urine is alkaline; when no impression is made on either, it is neutral.

Usually the estimate of the *amount* passed in twenty-four hours, and a record of the *color* and the *reaction*, cover the requirements of a nurse's observations of the urine. Sometimes, however, a physician requires the nurse to test daily for the *presence of albumin*. This test is effected as follows: Fill a test-tube one-quarter or one-third full of clear urine (after filtering the urine, if cloudy, through filter paper). If the urine is not distinctly acid in reaction, add a few drops of acetic acid. Boil the fluid over an alcohol lamp, directing the flame to the upper part of the urine. If a cloudiness appears,

it is thus at once contrasted with the clear urine of the lower layer, as the tube is held up toward the light. This cloudiness may be due to albumin or earthy phosphates. A few drops of nitric acid, if added, will make the phosphates disappear but not the albumin.

Leucorrhea, a discharge from the vagina, commonly known as "the whites," is much increased often during pregnancy, and is due to the greater activity in the secretion of all the mucous membranes. If a vaginal discharge be of a white, yellow, or green color, it indicates inflammation of the vagina itself. The discharge, on reaching the vulva and coming in contact with the air, decomposes and becomes irritating. Cleanliness is important in overcoming the effects of this. The itching induced by it is sometimes very obstinate, and generally worse at night. A solution of borax and water for bathing the parts, or carbolic acid, 15 to 20♏ to a pint of water, will often give relief. Should vaginal injections be ordered by the physician, they should be given with great caution. A fountain syringe should be used, which produces a continuous stream, and the rubber bag or reservoir containing the water should not be held higher than two feet above the level of the bed or couch on which the patient lies. The interrupted stream should never be employed. In some conditions of excessive discharge the physician may prescribe tannic acid suppositories to be used nightly in the vagina. After a thorough drying of the parts surrounding the vulva, they may be dusted with a powder consisting of

one part powdered camphor to four parts starch. This often gives great relief. Calomel powder may be used in the same way.

Hemorrhoids, or Piles, are often very troublesome during the latter part of pregnancy. Lying down immediately after a movement of the bowels, and remaining in the recumbent position for ten to fifteen minutes, will tend to relieve them, also care in obtaining a daily evacuation of the bowels, and the use of means to secure as soft a movement as possible. Should the piles come down, they should be fomented by cloths wrung out in hot water, to which a little Pond's Extract or fluid extract of hamamelis may be added,—one tablespoonful, or two, to one pint of water,—and when shrunken, anointed with cold cream or cosmoline, or any ointment prescribed by the physician, and returned into the bowel.

Sometimes the case is so aggravated as to necessitate keeping the patient in bed for a time. A physician should, of course, be consulted about the treatment.

Swelling and Pain of the external organs of generation and of the lower limbs, resulting from pressure and the overdistention of the blood-vessels, is best relieved by the recumbent posture.

Should the veins of the legs be much enlarged or the feet swollen, the patient should have compression made over them by the application of a bandage (the spiral reverse of the lower limb), or she should wear an elastic stocking, such as may be obtained of any good instrument maker. For the bandage the best material is

flannel cut bias, the width being about three inches. The bias bandage makes more even compression. Great

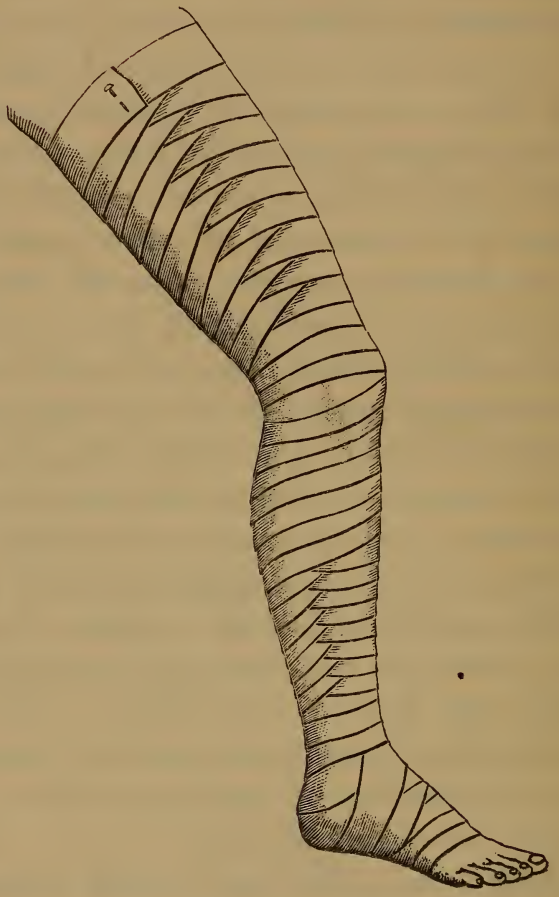

FIG. 5.—SPIRAL REVERSE BANDAGE OF LOWER EXTREMITY.

harm may result from the neglect of enlarged veins, as they sometimes become so distended as to burst. Prof. T. S. K. Morton has devised a method of putting on a

spiral bandage of the lower extremity, which retains its place better than that just described, which is apt to loosen when the patient moves about. Dr. Morton begins the application of his bandage as in the ordinary spiral reverse bandage of the lower limb, but carries oblique turns up and down the limb until its surface is entirely covered, in place of making reverses. When this bandage is further secured in place by carrying a running line of stitches up both the inner and outer side of the limb, it keeps its place perfectly and is quite as serviceable as an elastic stocking.

Pain caused by the stretching of the walls of the abdomen may be relieved by thorough inunction of the skin. Cotton-seed, olive, or cocoanut oil may be used for the purpose.

Severe pains in the back, neuralgic in character and so severe sometimes as to prevent the patient from sleeping, may yield to change of position, relieving pressure. Rubbing with soap liniment, volatile liniment, whisky, or any liniment not too active, is helpful. Warm hip-baths may sometimes be prescribed by a physician.

The Salivary Glands are in some cases very active during pregnancy, inducing so excessive a secretion of saliva as to cause the patient great annoyance. This trouble is generally very intractable, and may refuse to yield to all treatment, ceasing only with parturition. Astringent washes, as of tannic acid, alum, myrrh, etc., may be tried, as also the use of pieces of ice. Physi-

cians sometimes use atropia in small doses. Its use requires careful watching.

Bad Teeth, which occur so often during pregnancy, are said to be due to acidity of the saliva. A little baking soda or prepared chalk placed in the mouth at night will counteract the effect of this acidity when it exists. The question is often asked whether there is any danger in having the teeth filled or attended to during pregnancy. There is always some danger, because a certain amount of nerve-irritation is the result. If the patient be suffering, however, it is better to have them filled by a temporary rubber filling, which causes little pain or irritation, than to lose rest in consequence of toothache. Extraction of the teeth should only be allowed when absolutely essential. If the pain be simply a neuralgic pain, it is better to wait.

Vomiting is, as has been said in the preceding chapter, a most common accompaniment of pregnancy. It more frequently exists, perhaps, with the first pregnancy than any other. The act is accomplished, as a rule, without much effort. Diet seems to have little effect upon it. Various articles have been recommended for it, as rice water, beef-tea, barley water, the various gruels, the yolk of a hard-boiled egg, scraped beef in the form of sandwiches, ice-cream, cracked ice, etc. In some cases one or another of these seems to relieve the irritation. A cup of coffee, weak tea, or milk, taken warm early in the morning before the patient raises her head from the pillow, will often act as a preventive.

In extreme cases of vomiting rectal feeding must be resorted to. In obstinate vomiting it is important that the physician should examine for the position of the uterus or the existence of ulcerations or erosions.

It must not be forgotten that the constant loss of food may be so great a drain upon the patient's strength as to endanger her life. As this symptom is so largely sympathetic, the proper use of bromides or other nerve sedatives prescribed by a physician may be of great use in checking it.

Care of the Breasts in a pregnant woman necessitates careful attention to the prevention of compression. Full development should be permitted by the looseness of the clothing. The importance of the proper dressing of growing girls cannot be overestimated in this connection. Did mothers realize the evils—of which the atrophy of the breasts is but one—resulting from tight lacing, there would be fewer unhealthy women and fewer mothers unable to nurse their offspring. The nipples should be prevented from rubbing, and the skin over the nipples should be strengthened by using the *nipple-bath*—filling a small, wide-mouthed bottle one-third full of cold water and inverting it over the nipples daily, from five to ten minutes at a time. Sometimes a little cologne-water or alcohol is added to the nipple-bath, or, better still, borax in the proportion of one tablespoonful to the pint of water. Keeping off scabs and concretions of various kinds from the surface of the nipples by the use of a little *oil* is also admissible. This

keeps the skin pliable. The use of the *nipple-protector*, which will be referred to more fully in the chapter on the management of the lying-in, is of great importance where there is a tendency to flattening of the nipple, to remove the pressure of the clothing. Drawing out the nipple gently between the thumb and finger is also helpful in overcoming this tendency.

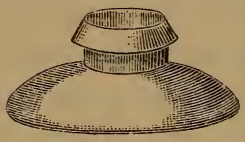

FIG. 6.—NIPPLE PROTECTOR.

The Clothing of a pregnant woman should be worn loose from the very beginning, both because the breasts begin to enlarge early and corsets interfere with their development, and because any amount of pressure upon the intestines tends to produce uterine displacements, which are especially dangerous during pregnancy, as they predispose to abortion. The clothing should all be supported from the shoulders.

Many new dress reform systems are now in vogue, having for their object the great desideratum of adjusting woman's dress so as to make it both healthful and beautiful. Fortunately, in this enlightened age ideas of physical culture are so modifying old-time ideas of beauty that the wasp waist, the multitudinous and voluminous skirts, the awkward and deforming bustle, the high-heeled boot, are fast becoming relics of the past. Among the dress reform systems now in existence there is none so fully meets my views of healthful and beautiful dressing as the Jenness-Miller System. But few

garments constitute the costume, and these are so constructed as to allow perfect freedom of every part of the body.

A complete costume for summer wear, according to this system, would consist in the chemilette,—a combined chemise and a pair of drawers, around the waist of which buttons may be fastened,—to

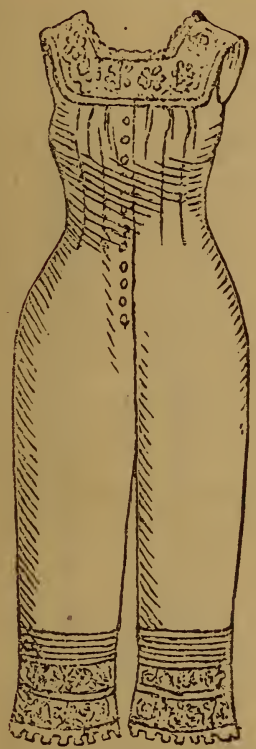

FIG. 7.—JENNESS-MILLER CHEMILETTE.

FIG. 8.—JENNESS-MILLER DIVIDED SKIRT.

which the second article of dress, the divided skirt, or Turkish leglette, is buttoned. The latter is made so full that it takes the place of petticoats, and the dress may be comfortably worn over it. Should the dress be of some

very sheer material, one additional muslin petticoat may be worn, similarly fastened to the waist of the chemilette. If a person is accustomed to wearing merino or silk underwear both summer and winter, the jersey-fitting union undergarment may be worn beneath the chemilette,

FIG. 9.—UNION UNDERGARMENT.

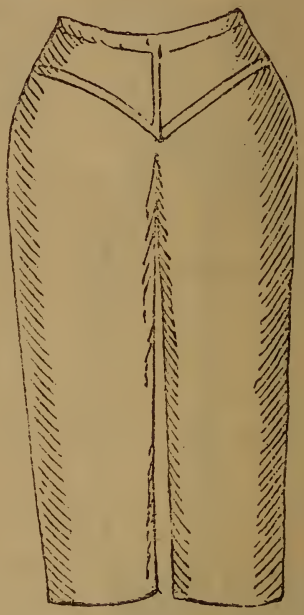

FIG. 10.—JENNESS-MILLER LEGLETTE.

or, the latter being dispensed with, the Jenness-Miller "model bodice," or the Equipoise waist and divided skirt may be worn alone over the union undergarment. The Delsarte waist has a similar object in meeting the hygienic and artistic requirements of woman's dress. The elastic lacers used for fastening the latter probably

allow the patient to exercise more fully her own discretion as to the amount of compression of the chest and waist thus brought about than is permitted by the more unyielding material of the Equipoise waist, hence hygienic requirements are probably better met by the latter.

For winter wear, plain leglettes of flannel, cashmere, or silk, or the same material as the dress, may be worn over the union undergarment and directly beneath the dress. Thus underskirts are entirely dispensed with and all the clothing is supported from the shoulders.

The skirts of winter dresses, being comparatively heavy, should be fastened to a waist of their own which has comfortably cut armholes.

Garters fastened to the waist are discountenanced, according to this system—as they should be, for they produce too much dragging on the waist, and the spiral-spring Duplex Ventilated garter is recommended to be worn until something better is devised, or safety pins may be used to fasten the tops of the stockings to the drawers of the union undergarment or buttons and button-holes may be similarly used.

It is probable that the fashion will come into vogue of combining the stockings with the union undergarment, when garters will be done away with entirely.

It is well for the stockings to be of wool or silk.

The shoes or slippers worn should be comfortable and with broad soles and low heels.

Slender women can well wear the chemilettes, dis-

pensing with all boned waists. Stout women, having busts, find more comfortable the model bodice, or the Equipoise waist,* which, I believe, is not one of the garments of this system, but an exceedingly comfortable one, in my opinion. The Delsarte breast support recently devised is a form of breast support which aims to support the weight of the breasts from the shoulders, so that waists containing bones may not be regarded as a necessity, even by the stout. Both the "model bodice" and Equipoise waist (the latter of which I prefer) contain bones, but dispense with the front steels, so injurious in the ordinary corset.

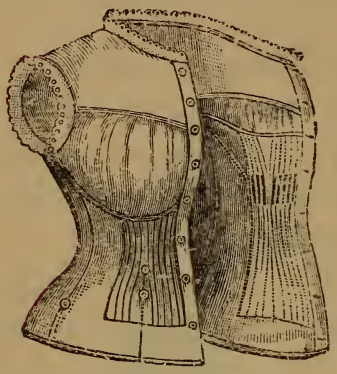

FIG. 11.—THE EQUIPOISE WAIST.

For the changes in shape induced by advanced pregnancy the union undergarments will need to be of larger size than those ordinarily worn (about two sizes larger). Many beautiful designs for dresses and other outer garments have been devised by Mrs. Miller, patterns for which may be obtained of the Jenness-Miller Co., in New York, or its agencies in other cities. Before leaving the subject I would mention, as one especially

* This, with the other garments mentioned, may be obtained through the Dress Reform Emporiums in Philadelphia, or similar agencies in other cities.

praiseworthy feature of this system, the perfect use of the arms permitted by the ingeniously devised patterns for sleeves and shoulder straps. If the skirts are not fastened to a properly constructed waist, as described, they should be supported by suspenders.

When the abdominal walls are much relaxed from stretching, allowing the womb to fall forward, it is well to use an abdominal binder or belt, especially during the last month of pregnancy. This helps to keep the uterus in proper position.

Flannel should be worn—at least during pregnancy—both summer and winter. A lighter flannel can be substituted in summer for that which would be worn in winter. The use of flannel is to prevent chilling of the surface, and this is especially important where—as in pregnancy—the kidneys are overworked. It is important also for the condition of the heart and lungs. Coughs often cause premature labors. The jersey-fitting knit union undergarment, before referred to, may be obtained in all grades and sizes, and is well suited to the purpose.

Bathing is very necessary for a patient during her pregnancy, as at other times. As regards the character of the bath, she can do as she has been accustomed to, using warm or cold water. A change from warm to cold water, or *vice versâ*, is, however, not allowable. A sponge-bath, followed by brisk rubbing, is the most desirable. The skin is thus kept in good condition. Shower-baths should be avoided.

Sea Voyages are injurious, because of the danger of receiving falls or blows in consequence of the motion of the vessel, and also because of the liability to sea-sickness induced by them. When it is absolutely necessary to take a sea voyage, there is probably least danger in the last three months of pregnancy, because the placenta, or afterbirth, is then well developed and its attachment to the uterus close.

The Regulation of the Diet during pregnancy is of great importance. A patient should eat heartily for breakfast and dinner, but the evening meal should be light, especially from the seventh month on to the close of pregnancy. This meal should consist of stale bread, with butter and cooked fruit, as stewed apples, and a glass of milk or weak tea. Digestion is less active in the latter part of the day, and often a hearty meal may prove the direct exciting cause of convulsions. The food should be plain, wholesome, nourishing, well-cooked, and chosen in each case with special reference to the avoidance of digestive disturbances and constipation. Meat in moderate quantity, broths, milk, eggs, and fresh fruit should constitute an important part of the dietary. Pastry and confections should be avoided.

There is a mistaken theory prevalent in this day that a mother, by abstaining from certain kinds of food, as meat, eggs, milk, etc., and confining herself chiefly to a fruit diet, may thus, by preventing the hardening of the bones of the child, do away largely with the pains of labor. The truth of the matter is this: that during

pregnancy all the functions of the mother's body are especially active in promoting the development of the child, hence an insufficient supply of essentially nourishing food will first affect the mother's system and render her unfit for the demands upon her strength at the time of parturition.

Should a restriction to the fruit diet effect what it is claimed to do as regards the infant, it would result in the production of sickly, rachitic children, poorly developed mentally and physically.

Moderate Exercise is essential during pregnancy. Walking on a level, not riding, is the best form of exercise. A daily walk should be taken, not, however, after nightfall. The patient should avoid lifting,—in fact, all straining movements,—and most particularly should she avoid the use of the sewing-machine. Exercise, judiciously taken by the pregnant woman, serves to prevent undue development in the size of the child, and in this way serves to make her labor easier.

Maternal Emotions.—There is sufficient proof that the mother's emotions influence the child to render it important that her surroundings during pregnancy should be as pleasant as possible, and that she should avoid fright or any violent emotion. At the same time there is no ground for the popular belief that when a pregnant woman is thus frightened her child will be "marked."

Complications of Pregnancy.—*Chorea*, or *St. Vitus' Dance*, *Epilepsy*, and *Insanity* are forms of nervous dis-

orders which sometimes complicate pregnancy. Such cases require skilled medical treatment.

Patients with *heart trouble*, and those who are *consumptive*, also require constant medical supervision, as pregnancy has a deleterious influence upon them. Consumptives sometimes feel better while pregnant, but sink rapidly afterward.

Those diseases which are associated with *high temperature*, such as the eruptive fevers and inflammation of the lungs, have a marked tendency to bring on the labor before time. There is also danger of their inducing puerperal septicemia.

Syphilis is a constitutional disease and a form of blood-poisoning which also has an injurious effect upon pregnancy. If the pregnancy does not terminate prematurely, the child is usually born with the taint of the disease.

CHAPTER IV.

ACCIDENTS OF PREGNANCY.

A Discharge of Blood from the womb, known as "uterine hemorrhage," may occur at any time during the pregnancy, and is usually a sign that the patient is threatened with a **miscarriage.** However slight the flow, the nurse should have the patient lie down until the doctor has been told of its occurrence, and decides what the patient should do. A note should be sent to the doctor, telling just what has happened, and clearly making him understand the urgency of the symptoms—that is, the amount and character of the flow—and the condition of the patient. A nurse should not trust to a verbal message, as the physician may fail to respond to the call promptly, not being aware of the urgency of the symptoms. The patient should be required to use the bed-pan, or, at least, a vessel the contents of which can be thoroughly examined, both for the bowels and the passage of urine. All discharges, soiled clothing, clots, etc., should be carefully saved for the inspection of the physician.

Meantime, an effort should be made on the part of the nurse to control the flow. The patient should lie with

her head low, and a pillow under her hips; she should not be warmly covered, plenty of cool, fresh air should be admitted into the room, and she should be kept exceedingly quiet.

Should the symptoms become more urgent, the patient being threatened with fainting, the head may be lowered by raising the foot of the bed, placing bricks or chairs under it in such a way as to make a decided inclined plane of the bed. The patient should be fanned, given hartshorne to inhale, and her limbs rubbed, to keep them warm, with alcohol or whisky. Small doses of whisky or aromatic spirits of ammonia may be given her in cold water, if able to swallow, or black coffee or tea, not too warm. If there is much blood flowing from the vulva, vaginal injections of hot water, at a temperature of about 110° to 115°, may be kept up until the flow ceases. The physician when called may think it best to tamponade the vagina. For this purpose long strips of sterilized gauze or sheeting may be needed, which the nurse should have in readiness.

Alarming hemorrhages are often the result of accidents, falls, or blows, or they may be caused by heavy lifting.

Hemorrhage from a Low Attachment of the Placenta, or afterbirth, or when the afterbirth occupies an unusual position,—that is, at the side of or over the mouth of the womb,—occurs without any history of accident. It takes place at any time from the seventh month of pregnancy on to its termination, and without

any premonitions of its coming. It may occur at night while a patient is lying in bed. The management of this condition would be the same as that described above, until the doctor comes.

Hemorrhage from Varicose Veins.—Women suffering from enlarged, swollen veins, "varicose veins," or "varices," of the lower extremities, if not careful in keeping the limbs bandaged or supported by elastic stockings may have hemorrhage occur by the bursting of one of these overdistended veins. The amount of blood lost may be so great as to imperil the patient's life. Should such a rupture of a vessel occur, compression should be made just below the point of rupture, to control the bleeding, until the physician, who should have been sent for, arrives, when he will resort to the measures necessary for securing against further hemorrhage.

Miscarriages are apt to recur, hence a patient who has once suffered from one should be cautioned to take additional care of herself during any subsequent pregnancy. Any sensation of weight about the hips, with the recurrence of a "show," or slight discharge of blood, and cramp-like pains should warn her to lie down and send for her physician. Such a patient should also take the precaution to lie down as much as possible (if not in bed, on a lounge) during the time when, under other circumstances, she would have her monthly flow. Any patient having had a number of miscarriages should keep herself under the care of her physician from a very early date in the

pregnancy, being placed under a regular course of treatment.

It is well, in this connection, to speak of the importance of care in the after-treatment of miscarriages. Not uncommonly, patients, especially of the working classes, get up and go about their work a day or two after the occurrence. This is a dangerous proceeding, for, though the ill effects may not be felt for a time, chronic disease of the uterus is apt to result. If the pregnancy terminates before the fourth month it is commonly called an *abortion*. Between the fourth and seventh months it is a *miscarriage*, and after the seventh month, if before term, *a premature labor*.

It is really necessary to give more time to the recovery from the effects of an abortion than to recovery from a confinement at term, and the patient should be willing to remain in bed at least a week or ten days, or longer, if thought best by her physician. The patient should not leave her bed so long as any discharge of blood continues.

Premature Rupture of the Membranes enclosing the child, with a discharge of colorless liquid, commonly known as "breaking of the waters," is another of the accidents of pregnancy, and is invariably followed, within a few days, at least, by the expulsion of the child. The patient will complain of her clothing becoming wet, either by a sudden discharge of a quantity of liquid, or by a slow but continuous flow. The nurse can assure herself that this liquid is not urine by her sense of smell.

The smell of urine is characteristic. With the amniotic liquid surrounding the child, there is almost an entire absence of smell, a peculiar, faint, musty odor being alone recognizable.

It is best, in removing this wet clothing from the patient, to set it away, that the physician may judge for himself of the character of the liquid. The patient should at once lie down, not taking the erect position for any cause, not even for defecation and urination, and the physician should be sent for, with a written statement as to what has occurred. It is important that the physician should see the patient as soon after the rupture of the membranes as possible, because the sudden loss of water may have brought about changes in the position of the child which may endanger its life. The loss of the entire amount of liquid contained in the sac would cause also difficulties in the delivery, or what is known as "a dry labor."

Convulsions may sometimes occur during the pregnancy. The symptoms which threaten this trouble are extreme restlessness and uneasiness on the part of the patient; severe headache, often confined to one side of the head; disorders of vision, as seeing things double, or seeing but the part of an object, sometimes very imperfect vision, and occasionally absolute loss of sight; twitchings of the muscles, especially of the face, may occur. The convulsion is ushered in by this restlessness and twitchings, beginning first about the eyes and extending rapidly to the mouth, arms, and lower extremi-

ties. The movements are not violent, hence the patient is not likely to throw herself out of bed. The physician should be sent for; meantime, the nurse should see that the patient is kept lying down, that her clothing is well loosened, especially about the head and chest, that plenty of fresh air enters the room, and that the patient is kept from biting her tongue. A folded handkerchief or towel slipped in between the teeth pushes back the tongue and prevents the teeth from coming down upon it. When the physician comes he will probably use an anesthetic to relax the spasm, until the system can be gotten under the effect of such nerve sedatives as he may direct to be administered from time to time.

The patient's feet should be kept warm and head cool. The members of the family must be kept calm and prevented from meddlesome interference, for the attempt to make the patient swallow any stimulant while struggling and unconscious may result very disastrously. Should the attending physician live too far away or be delayed in coming, the nearest physician should be sent for.

CHAPTER V.

GERMS AND ANTISEPSIS.

One of the most important things for an obstetric nurse to know is the meaning of the term "*antisepsis*," and the method by which antisepsis may be carried out in her work.

Literally, the term "*antisepsis*" means "*aganist sepsis or putrefaction*," and refers to the application of means by which objects may be rendered entirely free of all poisonous elements.

Dust, as we know, is everywhere present in the atmosphere, and consequently settles upon everything exposed to it. This dust consists, as has been found, of very minute organisms, which, when they are planted in a suitable soil, grow and multiply very rapidly, producing, as a result of their activity, the poisonous fluids and gases which characterize the process of putrefaction.

These products are called *ptomains*. The substances thus formed, when absorbed into the blood, give rise to the symptoms of blood-poisoning. It may, therefore, be plainly seen that the simple neglect of measures to destroy these dust germs may, by allowing decomposition of the natural discharges, lead to septic poisoning.

It has been found, as a matter of experience, that other diseases besides those commonly classed under the head of "childbed fever," or "puerperal sepsis," may be induced by these small germs, and this explains why it is so very important that erysipelas, scarlet fever, or other acute contagious diseases should be avoided by those engaged in obstetric practice. A nurse leaving such a case to go to a confinement case does so at the risk of her patient's life, for puerperal fever will almost certainly be induced by the germs which she carries from the former case.

Germs.—The minute bodies known as germs are, we see, greatly to be dreaded. They are of three kinds: first, those to whose action most of the infective diseases are attributed, and which are divided, according to their shape, into micrococci—round-shaped bodies; bacteria—oval-shaped bodies; bacilli—rod-shaped bodies of varying length; and spirilla, or spiral, thread-like bodies; second, yeasts; third, molds.

To give an idea of their size, it has been said of one of the most common forms of germs (the rod-like), that were fifteen hundred of them put end to end, they would scarcely reach across the head of an ordinary pin.

Their rate of *growth*, too, is very rapid, a common estimate being that they double themselves once or twice every hour. Thus, in the course of twenty-four hours a solitary germ may become a colony of between sixteen and seventeen millions.

Warmth, *moisture*, and a certain amount of *organic*

matter are the conditions which favor their development. Most, but by no means all, forms of bacteria require air; some, however, can only develop in the absence of air.

Germs may grow by *division;* that is, one of them may have a constriction form about its middle which finally becomes a complete partition, so that two distinct germs are thus formed. These similarly divide, and thus their number multiplies. Another method of growth is by spore formation. At one or more points in a rod an oval spot appears, which becomes brighter and clearer. These spots are *spores*, and when fully developed they become free, the rest of the rod dissolving away. These spores retain their vitality for years, ready at any moment when suitable conditions are provided to develop into fully formed germs. It is extremely difficult to destroy the vitality of these spores. Many antiseptics which readily kill the adult germs will not harm the spores—or only do so after a much longer time than is necessary for the adult germ.

Even where the antiseptics do not kill, however, they may retard the development of these germs and thus prevent their doing injury.

In all germ diseases a battle is fought between the patient's body and the germs with which it is infected. If the germs are present in small quantity only, it is possible the resisting power of the body may enable them to be overcome.

If, however, the general health is impaired by overwork, deficient food, overcrowding, or other depressing

influences, the patient will be more likely to succumb to the attack. This explains why some patients escape under the same conditions in which others suffer from blood-poisoning.

Lying-in patients are especially liable to germ infection, both because the labor leaves them in a state of exhaustion, and because there are always certain open surfaces present upon or within such a patient's body—so that these serve as direct avenues for the entrance of poison into the system. The site within the uterus from which the placenta, or after-birth, is detached is one of these; others being the fissures or lacerations about the neck of the uterus, the vagina, or the perineum. This shows the importance of protecting from decomposing discharges all such open surfaces.

Experiment has shown that bruised tissues are especially liable to destructive inflammation from the action of germs. This explains why first labors and difficult and tedious labors are most apt to be followed by septic infection.

Should such a labor be followed by the occurrence of sloughing wounds, it is especially important that any discharges from the wound should not be retained, but kept carefully removed by means of antiseptic irrigation, etc. Care should be taken that the antiseptics used should not be in sufficient strength, however, to irritate the wound, as this may increase the trouble.

Any condition, such as an attack of inflammation,

exposure to cold, or disordered digestion, because it lowers the vitality of the body, tends to increase the tendency to septic infection.

Besides the diseases resulting from the classes of germs most commonly concerned in the production of putrefactive changes in the body, we have some which are due to "*mold-infection*" and the action of *yeasts*—which are also lowly organisms existing in great numbers in the atmosphere, and capable of setting up destructive changes in tissues. It is the "molds" which are the cause of food spoiling when allowed to stand exposed to the air. The disease known as "thrush," which is characterized by grayish patches forming upon the mucous membrane of the mouth and adjacent parts, is due to a parasite which is one of the "yeasts." A number of skin diseases are caused by the growth of "molds."

Experiments.—In order to prove the fact that animal fluids will not undergo putrefaction if germs are excluded from them, a series of very interesting experiments were made for a class in one of the London hospitals recently, to illustrate some of the most common errors in nursing. These can be repeated for class instruction anywhere.

A series of glass tubes were taken, into which some sterilized beef-tea or beef-jelly was introduced. Into two of these tubes scrapings from under the *finger-nails* were placed, and in one the little specks were soon seen to eat their way into the jelly, followed by a trail of

microbes. In the other tube a dense mass of molds developed, and the beef-jelly was transformed into a dark brown color.

Into a third tube a *piece of cotton* used in wiping the vulva of a lying-in woman, previous to passing the catheter, was dropped, with the result of showing almost immediately a mass of germs which descended into the jelly, liquefying it by their presence, while the cotton, owing to the air it contained, floated on the surface.

A drop or two of *urine* from the bladder of a patient suffering from inflammation which had resulted from the use of an unclean catheter, was introduced into a fourth tube containing the sterilized beef-jelly. This caused the jelly from above downward to be converted into a dirty-looking yellow fluid, while a whitish mass of germs accumulated on the surface of the jelly.

The importance of antiseptic precautions in the nursing of infants was well illustrated by two other experiments. Into a tube containing some of the sterilized beef-jelly a drop of *sour milk* was placed; very rapidly a moldy coating appeared over the surface of the jelly. When we think of a similar process taking place in the digestive tract of an infant, we can realize why babies suffer so greatly from careless management of their food.

Another tube had introduced into it some scrapings from the mouth of a child suffering from "*thrush.*" Colonies of snowy-white germs appeared which, as they

grew larger, became of a greenish color and spread with great rapidity.

As object-lessons serve to impress the importance of facts, these experiments serve to keep before us the importance of antiseptic precautions in the care of mother and child.

CHAPTER VI.

APPLICATION OF ANTISEPSIS IN CONFINEMENT NURSING.

The use of antiseptics has almost entirely annihilated puerperal fever, commonly known as "child-bed" fever. This disease, as we know, is simply *blood-poisoning*, or *septicemia*, and is caused by the entrance through a wound of some poisonous material into the blood. In the simplest and most natural labors slight tears are apt to exist either about the external parts or about the neck of the uterus. There is always a wound inside of the uterus at the place where the placenta or after-birth was attached. In difficult labors there may be extensive wounds.

Septicemia, or blood-poisoning, may be caused by a piece of placenta or blood-clot being retained in the uterus or birth-canal after the delivery, and there putrefying. It may also be caused by the patient's attendants having some poisonous material on their hands, instruments, or various appliances, and bringing these in contact with her wounds. Dirty hands, dirty finger-nails, unclean bed-pans, soiled clothing, etc., may be the cause of the trouble. Sponges should never be used in the lying-in room. Artificial sponges made of antiseptic cotton enclosed in gauze may be substituted. The poisonous

material which might be thus conveyed to the wounds of the lying-in woman must be guarded against by the most scrupulous attention to thorough cleanliness.

Antiseptics are chemical substances which have the power of destroying the germs of putrefactive change or of rendering them inert. They should, therefore, be systematically used in all cases of labor to prevent septic germs from entering the wounds and giving rise to puerperal fever. The antiseptics most generally employed in the maternity wards of the Woman's Hospital are lysol, formalin, creolin, carbolic acid, corrosive sublimate, permanganate of potassium, iodoform, chlorinated lime, boric acid, salicylic acid, oxalic acid, and tincture of iodin, according to the purpose for which each is designed.

Solutions of corrosive sublimate should not be put into a metal dish, as the metal is thus corroded. The strength of all antiseptics is impaired by admixture with soap, so that one should not wash with soap in an antiseptic fluid.

The following rules, indicating the antiseptic precautions observed in the maternity wards of the Woman's Hospital, will illustrate the precautions to be observed in all confinement nursing:—

RULES TO BE OBSERVED BY NURSES.*.

1. The nurses on duty in the maternity wards shall have no communication with the general wards of the

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* Rules for preparation of the patient for labor are given elsewhere.

Hospital. They shall be transferred to separate dormitories from those occupied by nurses on duty in the general wards. They shall give especial attention to personal cleanliness.

2. They shall not touch the genital organs of a patient without having first thoroughly disinfected their hands. If their hands have come in contact with any foul discharges, this cleansing shall be accomplished as follows: 1st. Thoroughly wash the hands with soap and water, scrubbing them well with a clean nail brush. 2d. Wash the hands in a saturated solution of permanganate of potassium, which colors them brown. 3d. Bleach the hands by washing them in a saturated solution of oxalic acid. 4th. Rinse them thoroughly clean in boiled, filtered water. 5th. Dip them for at least two minutes in a solution of bichlorid of mercury (corrosive sublimate), of the strength of from 1–1000 to 1–4000, or a solution of carbolic acid or lysol 2 per cent. The washing with permanganate of potassium and oxalic acid solution may be omitted where foul discharges have not been handled.

3. Bottles containing solutions of corrosive sublimate 1–1000, and carbolic acid 1–40, shall be placed on the washstand in every ward and delivery room. The solutions of permanganate of potassium and oxalic acid shall be kept ready for use in the bath-rooms. A small jar of lysol, to be used in 2 per cent. solution when a lubricant is needed, shall be kept in each room.

4. The dressings removed from a patient shall at once be carried out of the room and burned in the furnace.

5. Immediately before the application of a fresh dressing the nurse shall irrigate the external genitalia with either a corrosive sublimate solution 1–4000 or carbolic acid 1–40, dry the parts with a piece of antiseptic lint, and then apply the antiseptic dressing. (Directions for preparation of antiseptic dressings are given elsewhere.)

6. If the patient be a primipara (a patient with her first child), an iodoform suppository (15–30 grs.) shall be introduced into the vagina for a week, once daily, unless directed otherwise.

7. Metal and glass catheters shall be cleansed after each use by boiling, and kept in the intervals of use in a solution of carbolic acid 1–40, or lysol, two per cent.

Vaginal nozzles shall be similarly treated. Each patient shall have a separate vaginal nozzle for her exclusive use.

Soft rubber catheters, after a thorough cleansing with soap and water, shall be kept in a solution of corrosive sublimate 1–1000, or a carbolic acid or lysol solution as above.

Before using the catheter the nurse shall wash it off with sterilized water and dip it into a lysol solution of 1 per cent.

8. Syringes shall be cleansed after each use by having an antiseptic solution pumped through them. No vaginal injections shall be given during the lying-in, except after a direct order from the physician.

9. If vaginal injections are required to be given when there is much fetid discharge from the vagina, an injec-

tion of lysol solution, ½ to 1 per cent., or permanganate of potassium (a sat. solution) may be given in preference to the ordinary solution of 1–4000 corrosive sublimate or 1–40 carbolic acid. The nurse should always carefully report the occurrence of any odor in the discharge.

10. All rubber sheets used about the patients' beds shall be washed in a solution of corrosive sublimate 1–1000 or carbolic acid 1–20.

11. All clothing removed from patients or their beds, soiled with discharges, shall be at once taken to the soak-tubs at the wash-house. When the blood has been soaked out in cold water they shall be placed in a disinfectant solution of carbolic acid 1–20 for an hour, and then put through the ordinary processes of the wash, being thoroughly boiled.

All soiled clothing shall be at once removed from patients' rooms.

12. On the death of any patient in the maternity the body shall be at once wrapped in a bichlorid sheet (1–1000) and removed to the mortuary.

13. No one shall be allowed to visit the Hospital who is engaged in the dissecting rooms, or attending postmortem examinations, or doing work in operative surgery upon the cadaver. No one attending infectious cases shall be admitted to the lying-in wards.

No visitors shall be admitted to see patients in the maternity unless provided with a special pass from the physician in charge.

14. Each room vacated by a patient shall be thoroughly cleaned and, if necessary, fumigated before it is again occupied.

The straw contained in the mattress upon which she lay shall be burned and the ticking boiled and then refilled with fresh straw for the next case. Should other than straw mattresses be used, they will require disinfection by dry or steam heat in a sterilizer especially constructed for the purpose, or may be subjected to the disinfecting fumes of formaldehyd gas.

The bed, stands, etc., shall be wiped off with a solution of corrosive sublimate or carbolic acid when the room is reopened after fumigation, or may be sprayed with vapor of formaldehyd.

15. The mother's nipple and the baby's mouth shall be washed with a solution of boric acid (10–15 grs.) to the ounce) before and after each nursing.

16. The baby's *cord* shall be kept dressed with sterile gauze, which shall be changed as often as necessary.

17. Immediately after delivery the baby's *eyes* shall be washed with a saturated solution of boric acid or one of nitrate of silver (1 gr. to the ounce) as directed.

Symptoms of Infection.—Every nurse should know how to watch for symptoms which may indicate that there is an undue absorption of the antiseptic employed taking place.

As to the selection of the antiseptic employed, the choice will be dependent upon the physician. If the nurse is obliged to depend upon herself, certain points

must be taken into consideration. Thus, she must remember that patients with kidney disease are especially susceptible to poisoning from the effect of corrosive sublimate; anemic or bloodless patients bear both carbolic acid and corrosive sublimate badly; children are particularly susceptible to carbolic acid.

Poisoning from Antiseptic Agents in confinement nursing most frequently occurs from the use of the antiseptic agent in the vaginal douche.

It is not unusual, when *carbolic acid* has been employed for some time, to find the urine of a dark greenish color; also to find that it contains albumin. One or more of the following symptoms may also be present: sickness or nausea, increased flow of saliva, difficulty in breathing, an anxious expression, sometimes fever, and always great weakness.

Should any of these symptoms arise, the doctor should be at once notified. The patient may be stimulated by repeated small doses of brandy, and external friction should be employed.

If carbolic acid has been swallowed, the first thing to do is to get rid of the poison by the administration of an emetic, as by copious draughts of mustard and water or salt and water; or the stomach should be washed out with the stomach pump. The easiest and one of the best things to use after this would be sweet oil or cotton-seed oil in large quantities. The patient's body must be kept very warm by hot blankets, and rectal enemata of beef-tea or milk and whiskey used.

The mouth and bowels are most apt to be first affected by the absorption of *corrosive sublimate*. Any tenderness or sponginess of the gums must be noticed, or increase in the amount of saliva. Looseness of the bowels also requires the immediate discontinuance of the drug. Headache, dizziness, pains in the abdomen, lowering of temperature, sweats, and general prostration, with albuminous and sometimes bloody urine, are other symptoms which may arise from the same cause.

The drug must be stopped at once, the abdominal pain relieved by the use of poultices, a soothing diet of rice-milk or arrow-root, etc., employed, and such medicines given as the doctor may direct.

If the drug is swallowed by mistake, the same treatment would have to be followed as in the case of carbolic acid poisoning, except that it is best at once to administer the whites of two or three eggs to form an insoluble albuminate of mercury in the stomach, so that it may not be readily absorbed, but brought up by the use of a subsequent emetic.

In mild cases, sleeplessness, headache, loss of memory, are the main symptoms, but in severe cases mania, melancholia, or hallucinations may develop from *iodoform poisoning*. Sometimes there is considerable rise in temperature. The withdrawal of the drug and the support of the patient's strength constitute the main line of treatment. Sometimes the use of about ten grains of cream of tartar, every hour for a time, has been found of advantage.

Lysol, creolin, permanganate of potassium, boric acid, and salicylic acid are harmless, so far as toxic effects are concerned, but have not the same power.

Chlorid of lime and chlorinated soda are of value as antiseptics because of the chlorine which is set free in their solutions. A small quantity, as from a half to one dram of the powdered chlorid of lime, may be dissolved in a pint or more of water.

The chlorinated soda is found in a preparation known as Labarraque's solution, of which a tablespoonful to a pint of water makes a solution strong enough for a vaginal injection. If to each ounce of this solution about four grains of permanganate of potash are added, the value of the solution as an antiseptic agent is greatly increased.

Condy's fluid contains, as its active ingredient, permanganate of potash, about eight grains to the ounce of water. A teaspoonful of Condy's fluid to the pint of water makes a solution suitable for a vaginal injection.

It is not likely that poisoning would occur from the use of any of these agents.

Permanganate of potassium and Condy's fluid are objectionable because of the brown stain they produce when dropped on clothing.

Lysol is a coal-tar product now largely used as a disinfectant in several surgical and lying-in clinics in Germany. It is claimed to be superior to carbolic acid, creolin, and other preparations of the same kind in its germicidal action, and it possesses powerful deodorizing

properties. It is perfectly soluble in water, and its solutions are soapy in character, removing all dirt (fatty or resinous spots, etc.), which does away with the necessity for soap in cleansing. It is used in one-half, one, and two per cent. solutions in midwifery and surgery.

Formalin is a forty per cent. solution of pure formaldehyd gas in water, to be further diluted with water for the purpose for which it is required. It is a powerful disinfectant for rooms, furniture, clothes, and the person. It is said to have the same germicidal power as corrosive sublimate without its toxicity. It is used in one-half to one per cent. solutions as a wash for internal cavities; in two per cent. solution as an application to the skin.

Rooms are disinfected, particularly after cases of septicemia, as follows: Burning sulphur may be used in the proportion of at least three pounds for every thousand cubic feet of air space. To secure any good results, the apartment should be made as close as possible by stopping up all apertures, through which the gas might escape, by means of wet rags, which may be stuffed into the cracks around doors, windows, etc. The sulphur is put into a deep tin pan, which is placed upon two bricks, in a tub partly filled with water, in the middle of the room. A little alcohol may be poured on the sulphur, which is then set on fire, or a few live coals placed in the pan. The fumes should be kept in the apartment from twelve to twenty-four hours, after which doors and windows should be thrown open, and it should

be subjected to free ventilation. All surfaces in the room must then be washed off with a carbolic acid solution (two per cent.), or corrosive sublimate 1–1000.

The generation of formaldehyd gas in definite quantities for the disinfection of houses, rooms, furniture, bedding, and clothing is a later approved method of procedure, and has received the indorsement of Medical Health Officers both here and abroad.

Different forms of apparatus have been devised for generating formaldehyd gas. For practical house-disinfection the gas generated from 8 ounces of a 40 per cent. solution of formaldehyd, to which has been added 10 per cent. of glycerin, is required for every 1000 cubic feet of space.

Two forms of apparatus are offered for the purpose—the Formalin Disinfector, for the disinfection of large rooms or entire buildings, and the Formalin Disinfectant and Deodorizing Lamp.

Whatever make of apparatus is employed, it is essential that the formaldehyd vapors generated shall be in real gaseous form and in a superheated state. Formalin pastilles, each containing 15.4 grains, may be used to generate the gas. Two pastilles (30.8 grains) are required for each cubic meter (35 cubic feet) of air space. Directions for using the different forms of apparatus are supplied by their manufacturers, as also for the means to be employed for generating the gas. Formalin vapor is innocuous to the higher animals and to man,

and is said not to injure the most delicate fabrics. Its advantage in this respect over sulphur fumigation may readily be seen.

Evolved in the proportions above mentioned, it is said to destroy the bacilli of typhus, diphtheria, and all the ordinary infectious diseases.

All the windows and doors in the room to be disinfected should be closed, also all large openings, as radiators, chimneys, etc. The closing of very small cracks and openings is unnecessary, as the formaldehyd gas is heavy and does not easily escape from the room. Articles in the room, as linen, quilts, blankets, etc., should be stretched out on a line, in order that as much as possible of their surface shall be exposed to the action of the fumes. Books should be suspended by their covers, so that the pages are open and fully exposed.

The gas is introduced into the closed room through the keyhole of the door, into which the outlet tube from the generator is carried.

The accompanying illustration shows the method of employing a formaldehyd gas generator.

The stout copper retort has a capacity of four pints. The aperture at the top is closed by a stopper, held in position by a thumb-screw and yoke, "B." Two brass tubes enter the stopper; the inclined or outlet tube is connected by a short length of flexible rubber tubing with a smaller brass tube, which is introduced through the keyhole of the room to be disinfected.

The second tube entering the stopper extends to $\frac{1}{16}$ of an inch of the bottom of the retort, and serves as a level indicator to indicate when the solution has nearly all

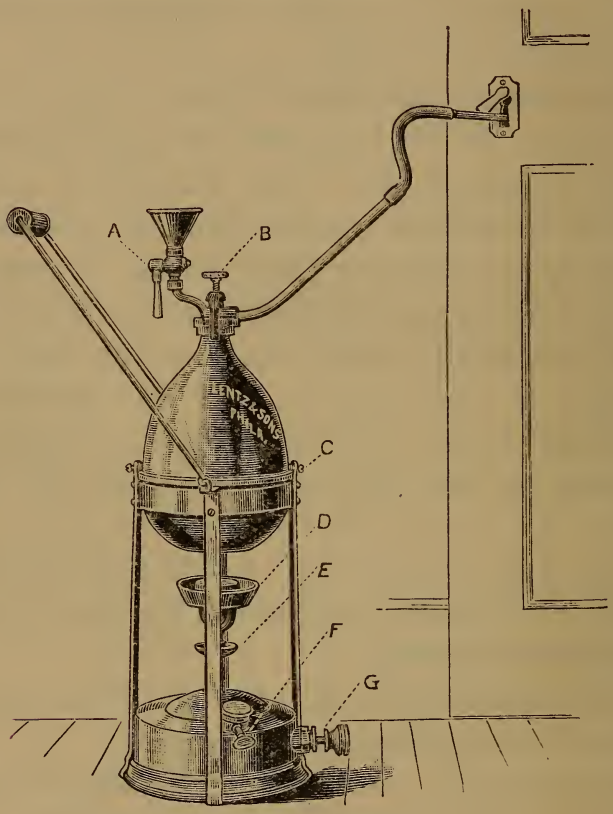

FIG. 12.

evaporated by liberation of vapor. It is provided with a copper funnel for refilling without stopping the operation. This tube can be closed by means of the stop-cock, "A," and is merely opened for a few seconds

toward the end of the operation to ascertain whether the retort is nearly empty, as the gas will then escape through the orifice of the stop-cock.

The apparatus is heated by means of a special Primus blast lamp, burning kerosene oil, which requires no wick. It requires no attention after lighting, excepting about once every hour, when it requires pumping for a few seconds by the piston, "G." The lamp can be instantly extinguished by one turn of the thumb-screw "F." It will burn several hours with one filling.

The retort is placed in a ring which is firmly braced in position by four brass supports or bands. It can be removed by the turn of a screw at "C." The lamp is also detachable from the supports. The whole apparatus is firmly braced together, and can easily be carried by the handle when filled for use. The gas generated needs to be left in the room at least three hours.

Infected Underclothing, Bedding, etc., are best destroyed by fire, if of little value. To disinfect them we may employ—

(*a*) Disinfection by formaldehyd fumes or vapor.

(*b*) Boiling for at least a half hour.

(*c*) Immersion in corrosive sublimate solution 1–1000 for three or four hours.

(*d*) Immersion in a 5 per cent. carbolic acid solution for three or four hours.

To avoid the discoloring effects of these solutions, clothing taken from them should be thoroughly rinsed out in clear water before it is sent to the laundry.

Outer garments which would be injured by boiling water or a disinfecting solution may be sterilized—

(*a*) By formaldehyd disinfection.

(*b*) By exposure to dry heat at a temperature of 230° F. (110° C.).

(*b*) By the steaming process in a suitable apparatus, such as is found in most hospitals. Clothing which can not be thus thoroughly disinfected must be burned.

Mattresses and Blankets should be disinfected in the same way. If these means are not available, mattresses may have their coverings removed, and washed and boiled separately, the contents being immersed in boiling water for a half hour.

Water-closets.—Solutions of copperas (sulphate of iron) or green vitriol, in the proportion of 1½ pounds to a gallon of water, are good, and also very cheap, for disinfection of water-closets, etc. The corrosive action of copperas on wood must be borne in mind in its use, and solutions employed not allowed to drip on the woodwork in the room.

Slaked lime and chlorid of lime may be used for privy vaults.

Solutions of the chlorid of lime may also be used in water-closets, but there is danger of choking up the pipes if the solutions contain considerable deposit. Carbolic acid solutions, 5 per cent., or bichlorid 1–1000, may be used instead of the above.

CHAPTER VII.

PREPARATIONS FOR THE LABOR.

The relations between nurse and patient begin from the time the engagement is made for a nurse's attendance upon the confinement.

The nurse is generally consulted beforehand as to the articles that will be needed at the time of the confinement and for the baby's outfit. Also, she is sometimes asked concerning the choice of a room for the labor and lying-in.

The *room* is a most important consideration. It should be light, having the free entrance of sunlight, quiet, and well ventilated. It should not be too near a water-closet; in fact, it is far better to have the water-closet out of the house entirely. There should be no stationary washstand in the confinement room; or, if this cannot be avoided, the connection with the sewer pipe should be cut off, or the holes and escape pipe in the basin plugged up, the basin being kept filled with fresh water frequently changed. No slop jar or any vessel containing wash water, discharges, etc., should be allowed in the room. An ounce of prevention, in the way of keeping disease germs out of the room, is worth more than a pound of cure.

As regards the *mother's dress*, she should be advised to have a sufficient number of good-sized merino or flannel vests, to be able to change night and morning, so that the same vest shall not be worn both day and night. These are more readily changed if opened all the way down the front and fastened with tapes. The free action of the skin after delivery necessitates the use of flannel or merino to prevent chilling. If a long night-dress is worn, there is no necessity for the chemise. The night-dress, also, should be opened all the way down the front, as it renders easier for the patient the frequent changes which are necessary. Sufficient night-dresses and vests should be provided to make it possible for the clothing to be changed every day.

Two or three *abdominal bandages*, also, should be provided, either fitted to the patient's person or straight. If fitted, the bandages should be prepared when the patient is about six months pregnant, to be the right size after delivery. The bandages should extend from the pubic bone (the bone just above the external generative organs) to the breast bone, being about a half-yard wide and long enough to go once around the body and overlap one-third. It is best made of soft muslin doubled, the seams being turned in at the edges. Large safety-pins should be provided for fastening this bandage down the front.

Where the breasts are large and pendulous, some bandage may be required for their support. An abdominal bandage may be used for this purpose, though it is rather wider than is necessary.

When the physician does not require the antiseptic dressings, now almost universally used, at least two dozen *napkins* of diaper linen should be provided for the mother, as very frequent changes of the napkin are essential during the first few days after the delivery, while the discharges are free. The napkins should be baked before they are used.

The *antiseptic dressings* used in the Woman's Hospital of Philadelphia consist of sterilized gauze and gauze and

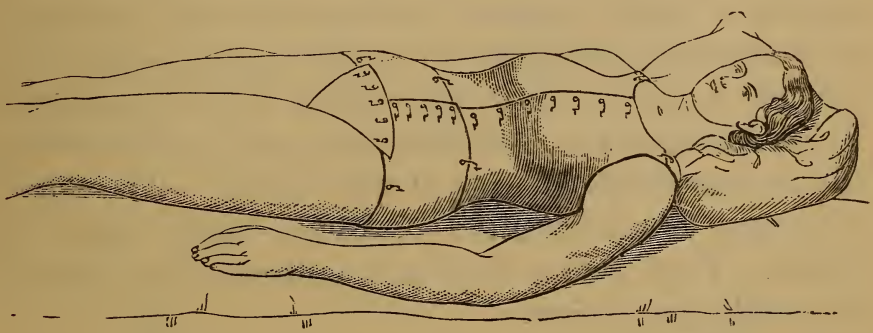

FIG. 13.—OCCLUSION DRESSING.—(*Dr. Garrigues.*)

cotton pads. A number of these dressings being prepared may be folded in a towel and placed in a steam sterilizing apparatus or baked in an ordinary oven for an hour. When removed they should be kept enclosed in the towel without opening until required for use. The Garrigues occlusion dressing, employed in many large lying-in hospitals, is shown in the accompanying cut. It consists of a piece of dry patent lint, 6 × 8 inches, which has previously been rendered antiseptic

by saturation in a solution of bichlorid of mercury 1–1000. This is placed, doubled in its width, so as to make a dressing, 3 × 8 inches, directly over the external organs of generation. This lint is covered by a piece of gutta-percha tissue, 4 × 9 inches, which is wet in a 1–4000 solution of bichlorid of mercury.

These dressings are kept in place by a napkin of sublimated cheese cloth, 18 inches square, folded to form a diagonal 5 inches in width, within whose folds a pad of sterilized oakum or cotton waste is enclosed. The napkin is tightly fastened to the abdominal bandage, both anteriorly and posteriorly, by means of safety-pins, and the access of air to the vagina is thus prevented. These dressings are changed at least once in three hours, the dressing removed being at once burned. It is seldom necessary to continue the dressings longer than two weeks. They should be kept up, however, so long as the discharge persists.

After the above statement, it will be seen that a nurse should have the patient obtain of each of the articles comprising the dressing the following quantity: Cheese cloth, 12 yards; gutta-percha tissue, 1 yard; patent lint, 2 yards; oakum or cotton waste, ½ to 1 pound.

The cheese cloth may be obtained at any dry-goods store, and prepared by first thoroughly washing with soft-soap and boiling, and then wringing it out in a solution of bichlorid of mercury 1–1000. The patent lint should be rendered antiseptic in the same way. The sterilized gauze or lint may then be rolled in a baked

towel and dried in an oven. The gutta-percha tissue, patent lint, and oakum may be obtained at a drug store; the gutta-percha tissue may be more readily obtained directly from a rubber store, where the syringe also may be bought.

In winter it is well for the mother to be provided with a "*Nightingale wrap.*" This is made of two yards of

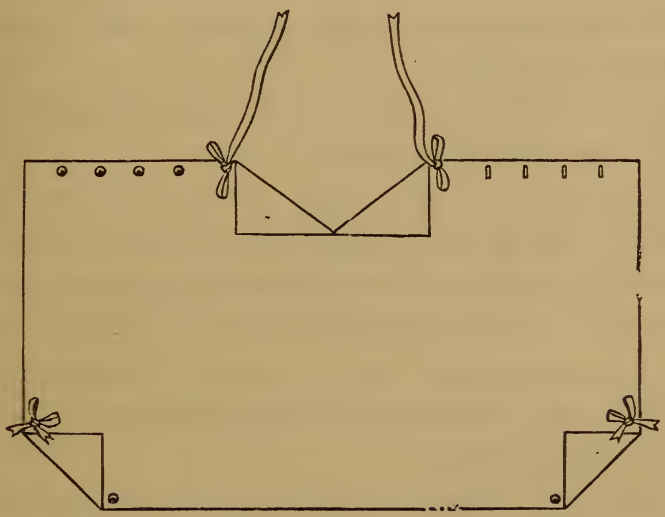

FIG. 14.—NIGHTINGALE WRAP.

flannel of ordinary width. A straight slit, six inches deep, is cut in the middle of one side, the points so formed being turned back to form a collar. The corners farthest from this collar are also turned back to form cuffs. The whole may be bound or pinked around the edge and fastened by means of buttons or ribbons.

For the *confinement bed* the patient should provide

two pieces of rubber-cloth a yard and a half square. For a single bed two rubber army blankets may be used, if, as in the maternity practice in the Woman's Hospital, it is desired to cover the whole bed. The arrangement of the bed will be explained in a later chapter. White rubber gum-cloth is the best when it is obtained in the piece. If the patient is poor, table oil-cloth may be used; it is cheaper and answers the purpose as well; or layers of newspapers tacked together will make very good temporary pads.

A piece of floor oil-cloth is the best *protection for the carpet* at the side of the bed.

Rubber-cloth should never be used but for one confinement. The rubber cracks when folded and put away, and no longer serves its purpose of protecting the bed. Then, too, it is very important to be sure that everything about the confinement bed is perfectly fresh and clean. Hence a rubber-cloth used for confinement should neither be borrowed nor lent.

Sleeping on rubber-cloth makes a person perspire, hence it is desirable to get rid of it as soon as one can. It is seldom necessary to use it after the fifth or sixth day.

Other articles necessary to have on hand will be half a dozen old sheets, about a dozen towels, a new syringe (a fountain syringe, large size, is the best), a bed-pan (French pattern), nail-brush, white Castile soap, a jar of cosmolin or vaselin.

I desire, in this connection, to emphasize the fact that

the *syringe* should be a new one. This is an antiseptic precaution. Hence advise the patient strongly against the use of any syringe which may have been used for other purposes, however well it may work. Of course, the borrowing of such an article from a neighbor or friend should be strongly discountenanced.

Regarding the *baby's clothes*, if they are made too elaborate they will not be washed often enough, hence they should be *plain*. As the depressing influences of cold are very injurious to babies, the clothing should be *warm*, hence a flannel garment with long sleeves and high neck should be worn next the skin, the thickness varying with the season of the year. The activity of the life processes make it important that every organ of the body should be unimpeded in its action and free from pressure, hence the clothes should be very *loose* and *light* in weight.

The only articles absolutely needed to constitute an *outfit* are, 1st, a soft flannel shirt, with high neck and long sleeves, opened in front. This is better than the merino vests or the knit shirts, which shrink on washing, and are then difficult to put on and take off. 2d. A binder, or bandage of fine, soft flannel, four inches wide, and long enough to go around the abdomen once and lap over about one-third. This should be made without a hem, the raw edge being overstitched to prevent raveling. The binder is best fastened by means of two pieces of tape attached to one of its edges.

This arrangement does away with the necessity for

pins in fastening the binder, the pieces of tape being simply wound around the body to secure the binder, and tucked in at one edge. Some prefer the knitted wool band, made of single zephyr and knitted in the ribbed stitch, as wristlets or mittens are often knit, to permit of greater elasticity. These bands are made a little narrower in the center than at either extremity, so as to be held in place better. They are made perfectly circular, just like a wristlet, and are so elastic that they can readily be drawn up over the limbs and adjusted to the body. 3d. A napkin of cotton or linen diaper is the best; Canton flannel makes a very poor baby's napkin, as it becomes stiff when washed. Napkins are generally made too large for a new-born baby, and require to be folded into too many thicknesses. A napkin which when folded once is half a yard square, is of ample size. The number of napkins supplied should be generous, so as to permit of frequent washing and thorough airing. Napkins should always be fastened by safety-pins. For the protection of the outer garments from dampness due to frequent urination, it is well to have a second napkin folded and laid beneath the baby's hips. The use of rubber-cloth over the napkin for this purpose is much to be condemned, as it overheats the parts and makes the skin tender. 4th. A flannel slip of heavier or lighter texture, according to the season, serves the purpose both of petticoat and dress. This should be made just long enough to cover the baby's feet—about twenty-five inches from neck to hem, and should be fastened in front.

The ordinary fashion of making a baby's clothes very long is objectionable because of the greater weight of the clothes preventing free movement of the child's limbs and the development of its muscles. The object of fastening the clothing in front rather than in the back is to avoid the necessity of the baby's lying on the uneven surfaces produced by buttons, tapes, and hems, which no doubt are often a source of discomfort to its tender skin. 5th. Knit woolen socks are necessary to keep the baby's feet warm, and it is well to have them extend pretty well up the leg, reaching even to the knee, as cold feet are often an exciting cause of colic.

The above are the only essential articles of clothing for a baby. Should the mother prefer, for the sake of effect, to see her baby in white muslin, a slip of muslin can be worn over the flannel slip. These garments do away with all waistbands and the constriction of the chest thereby induced. Should the garments be made with waistbands, they should be supported from the shoulders by means of straps, or armholes should be made in the bands, just as in the case of an older child; they will not need then to be drawn so tightly around the child to be retained in place.

A heavy blanket is not needed to wrap the baby in, in a room at the temperature of the lying-in room—from 68°to 70°; but should it be carried from one room to another, or when it sleeps, a blanket, or some wrap, ranging in weight with the season, will need to be thrown over it.

When a baby has but little hair on its head, and shows a tendency to catch cold readily, a plain cambric or light flannel cap may be employed as a head covering. This is a preventive against catarrhal troubles affecting the nose and throat.

An outfit for babies which has obtained much favor among mothers is called the "*Gertrude Suit*," and consists of three garments: The first, or undergarment, is made of soft flannel, and is long enough to extend from the neck to ten inches below the feet. The next garment, cut in the same way, but half an inch larger and five inches longer, is made of muslin. Over these comes the "slip," also Princess style, and the only one of the garments with long sleeves. (This is the most objectionable feature of the suit; a baby's arms should be well covered.) It has a longer skirt than either of the other garments. All are fastened behind by small buttons. These three garments are put together and all slipped on to the baby at one time, facilitating the process of dressing very much.

In our opinion, however, this suit has not the same advantages as that worn in the Maternity of the Woman's Hospital of Philadelphia, and first described. The fastening of the clothing in front, the fewer number of articles comprising the wardrobe, and the fact that they may be very easily taken off and put on, while they meet all the requirements of warmth, looseness, and lightness, make this outfit preeminently a comfort to the baby.

It is well to provide a *lap-protector* for the mother or

nurse who shall have the baby in charge. This may be made of any thick wash material, and if shaped like a pillow-case, and fastened at one end by buttons, a piece of rubber sheeting can be slipped inside of it. The rubber can be slipped out and the case washed as often as necessary.

The articles provided for the *baby-basket* may be the following:—

Three or four pieces of linen bobbin, about eight inches long.

A pair of blunt-pointed scissors.

Large and small safety-pins.

Several small squares of soft linen, about four inches square, for dressing the cord, and two inches square, for washing the eyes and mouth.

A soft hairbrush.

A powder-box and puff, with lycopodium or fine starch powder, or plain talcum. (The scented powders are often irritating.)*

A small jar of cold cream.

Two soft towels.

A full suit of clothes, as described above, for the baby.

A woolen shawl or wrap.

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* Many obstetricians discard the use of all powders for a baby's skin.

CHAPTER VIII.

SIGNS OF APPROACHING LABOR—THE PROCESS OF LABOR.

Certain changes take place during the latter part of the ninth month which indicate that labor is approaching. One of these is the *sinking of the abdominal enlargement.* The upper part of the womb, which has at the beginning of the ninth month been high enough to reach the pit of the stomach, comes down gradually to a point about midway between the extremity of the breast bone and the navel. This sinking of the womb is known as "descent" or "settling" of the child, and indicates that the head of the child, which is ordinarily the part to be born first, has stretched the lower part of the womb and is finding its way into the cavity of the pelvis, through which it must pass in the birth. Great relief to the mother results from this descent of the womb, as the lungs are no longer pressed upon to the same extent as before. The change in the position of the womb produces, however, an increased amount of pressure on the lower portions of the body. Swelling of the lower limbs is apt to result in consequence of this, and walking is rendered difficult. Piles, or hemorrhoids, are apt to form, and irritability of the bladder to exist.

During the last two weeks of pregnancy patients are apt to suffer from what is known as "*false pains.*" These are cramp-like pains, so much like labor pains that patients are often deceived by them, and led to imagine that the labor is really coming on. They are called "false pains" to distinguish them from the pains of labor, which are known as "*true pains.*" The way to distinguish between the two kinds of pains is to observe whether there is any regularity as to the time of their occurrence; also, whether the interval grows shorter, and whether, with this shortening of the interval, the pains grow stronger. "False pains" are irregular in their occurrence, while "true pains," though starting perhaps at quite long intervals, as three-quarters of an hour or a half-hour apart, gradually come nearer together and grow stronger. "False pains," also, are generally located in the abdomen. "True pains" more frequently start in the back, coming forward to the abdomen and extending down the thighs. A strong "pain" is apt to be followed by one or two weaker pains. A nurse, if in doubt as to whether the pains are real labor pains or not, should have the physician sent for, who will make an examination to learn what the condition of the parts may be. A sign that makes it probable that the labor is really coming on is the appearance of what is known as the "*show*," a discharge of mucus, tinged with blood, which comes from the mouth of the womb, and indicates that the stretching of the mouth of the womb is taking place.

The whole process of labor is divided into *three stages*. The *first* is the *stage of dilatation*, when the mouth of the womb is stretching so as to allow the child to pass through it. With women who have never borne children this stage lasts on an average fifteen hours, while it is a very variable period for those who have previously borne children—sometimes lasting but three or four hours; the average time given is from seven to eleven hours.

The *second* stage of labor begins after the completion of the stretching of the mouth of the womb and ends with the *birth of the child*. For women with their first birth, this period lasts from an hour to an hour and a half; with others, from twenty minutes to an hour.

The *third* stage of labor includes the interval between the expulsion of the child and the *coming away of the afterbirth*—on an average a half an hour or twenty minutes.

The time for the entire labor, in a case where it is the first birth, is about seventeen hours. In cases where other children have previously been born, the average is from eight to twelve hours.

The "*bag of waters*" is a sac of membranes in which the child is enclosed. Within this bag is found a liquid in which the child floats. The presence of this liquid between the child and the walls of the womb serves to protect it from the effect of falls or blows to which the mother may be subjected, and favors the regular development of the child. When labor begins with the

stretching of the mouth of the womb, a small portion of this sac is pushed out like a wedge beyond the rim of the dilating orifice, and helps thus in the dilatation. When the waters break early, labor is much more tedious because the even pressure of the bag of waters on the mouth of the womb is lost, and the stretching cannot, therefore, go on so rapidly and easily. As the mouth of the womb opens, the pouch formed by the bag of waters is pushed further and further out into the vagina, the pains become stronger, and the pouch at last bursts, letting the water escape. This is "the breaking of the waters," called by physicians the "rupture of the membranes," and it should not take place before the mouth of the womb is fully open.

Labor, however, sometimes begins with this loss of water, as has been said in the chapter on the Accidents of Pregnancy.

The pains of the first stage of labor are cutting, grinding pains, very hard for the patient to bear, and causing her to be nervous and irritable.

The *cries* made by the patient during the first stage of labor are very different from those of the second stage. They are cries of complaint and suffering, while during the second stage they are rather groans accompanying a bearing-down effort on the part of the patient. The pains of the second stage are called "forcing" or "bearing-down pains." An experienced woman will know, as soon as these pains begin, that the doctor should be on hand as soon as possible; and she should send him

a message which will lead him to realize the necessity for coming at once.

The pains during the second stage increase in strength and frequency; the patient holds her breath and bears down forcibly with each pain. The effort causes her to become flushed and heated, and to break out into perspiration.

During this time the head of the child is forced down the middle passage, or vagina, to the external opening. At the end of each pain the head goes back a little, so that the birth-track may be very gradually stretched. With women who have previously borne children there is often so much relaxation of the tissues forming this passage-way that the head of the child may be expelled by a single pain. This sudden birth of the head often causes very serious tears.

After the external opening has been sufficiently stretched by the slow advance of the head, it gradually works out altogether, and then the worst pain is over. There is then a short interval of rest before the remainder of the body is born, the shoulders coming first by a strong pain, after which the lower part of the body easily slips out.

The contraction of the womb, or "pains," now ceases altogether from five to twenty minutes or even half an hour, when there is again a little pain and the afterbirth comes.

The above description is an account of what labor should be if perfectly natural. There are many emer-

gencies which may arise in any case, hence, for the sake of the patient and nurse, every effort should be made, even in what promises to be a normal case, to have the doctor on hand in time.

CHAPTER IX.

DUTIES OF THE NURSE DURING LABOR.

With the occurrence of the symptoms which indicate the onset of labor the nurse, if not already in the house, should be immediately sent for.

A nurse should give very prompt attention to such a call, and lose no time in getting to the patient, as many women pass through the different stages of labor very rapidly.

On arriving at the patient's house, the nurse should put on her *working-clothes*, which should always be scrupulously clean and of wash material. The uniform worn by the nurses of the Woman's Hospital, of Philadelphia, consists of a blue and white striped seersucker dress, very plainly made ; a large, plain white apron, with bib, well protecting the dress; over-sleeves, of same material as apron, for the protection of the dress-sleeves, and a white muslin Normandy cap. This makes a plain yet attractive dress—which is a matter of considerable importance to the patient, who gets her first impressions of her nurse through her personal appearance.

Woolen dresses, or those made of any material which

will not bear frequent washing, should never be worn by a nurse. There is always the possibility—in fact, the probability—of such a dress having been worn during her attendance upon some previous case of illness, in which case it would greatly endanger the patient. The feeling of the wash dress as it comes in contact with the patient's skin, when the nurse lifts her or works around her, is much more agreeable than that of woolen stuffs. Then, too, it is more businesslike, looks more like work, and gives the patient the comfortable feeling that a nurse means to help her, rather than to sit around as a fine lady, attending simply to the daintier duties of attendance upon the sick. I introduce this subject here because I find that many graduate nurses, in breaking their direct connection with their training-schools, set aside as a matter of small moment this requirement concerning dress—a requirement in which a most important principle is embodied and which demands the hearty support of every truly scientific nurse.

Another important point I wish to mention here, and that is, that a nurse should learn to dress herself quickly, so that she can slip into the necessary garments in a very few minutes, and thus, by her promptness in reporting for duty, awaken the confidence so essential to her management of patients.

On entering the room where the patient is to be found, while exchanging the necessary greetings, the nurse should exercise her powers of observation and rapidly take in the state of affairs, forming her opinion as to how

far the labor has probably progressed. Should "pains" be occurring, she will recognize, from what has been said in a preceding chapter of the pains characterizing the different stages of labor, whether the patient is really in labor or not, also, how much time is probably left for the making of preparations. She can learn from the patient, in the intervals of her suffering, when the pains first began, how often they occur, whether the waters have broken, etc., so that she may know what message to send the doctor, should the necessity exist for so doing. After this duty has been performed, if labor has really begun, the nurse should give herself to the *preparation of the patient* and the *room* for the confinement.

Preparation of the Patient.—The nurse should inquire of the patient whether her bowels have been freely moved recently. If not, a simple *enema* of soap and water may be given for the purpose of clearing out the lower bowel and making the second stage of labor easier and cleaner.

Inquiry should be made as to whether the patient has *passed water freely*. If not, she should be urged to make the attempt, and, if not successful, the physician should be notified.

It is desirable, if there is time, to have the patient take a *full warm bath* and put on entirely fresh clothing.

A *vaginal injection* of some antiseptic solution may then be given, and the parts about the external *generative organs washed off* with an antiseptic solution. In the Woman's Hospital the vaginal injection consists of a

solution of bichlorid of mercury 1–4000. The external parts are washed off with a similar solution of 1–2000 or 1–4000. Other solutions may be used according to the choice of the attending physician.

Preparation of Antiseptic Solutions.—Tablets of bichlorid of mercury may be obtained at any apothecary's, one of which, if added to a pint of water, will give, as a rule, a solution of 1–1000, from which solutions of varying strength may be made up by the addition of more or less water. Thus, on adding seven parts of water to one part of the bichlorid solution 1–1000, a solution of 1–8000 may be obtained. It is always desirable that the nurse should have a little porcelain or agate-ware gill measure, by which she can readily and quickly prepare these solutions. If tablets cannot be obtained, powders of 7½ grs. each of bichlorid of mercury, if added to a pint of water, will give a solution of 1–1000.

Creolin, a coal-tar preparation, four times stronger in its antiseptic properties than carbolic acid or lysol, may be used in place of bichlorid of mercury. To make these solutions, ½ to 1 dram of the liquid preparation should be added to the pint of water. Creolin and lysol, though not so strongly antiseptic as bichlorid of mercury, have greatly come into favor of late, both because they do not have the same corroding effect on instruments which may be used, and because there is less liability of poisoning than in the use of bichlorid of mercury. An objection has been raised to their use

for vaginal injections, as it is claimed that their admixture with blood produces a tarry precipitate. The coagulation of albumin in vaginal discharges, by the action of corrosive sublimate, is similarly claimed to deteriorate the value of the latter as an antiseptic agent. In cases where there is excessive discharge it may be better, therefore, to substitute a solution of permanganate of potassium, or carbolic acid.

A nurse should never lose sight of the fact that the corrosive sublimate (bichlorid of mercury) tablets are a deadly poison, hence there should be no neglect as to care in their handling.

Carbolic acid solutions are preferably used by some physicians. A two per cent. solution of the latter may be made up by adding 2½ drams to the pint of water.

When the patient seems to be in *active labor*, the nurse should keep her lying down until after the physician has made an examination. He will then state whether the patient may sit up or walk about the room.

Because of her long confinement to bed the *hair* of the patient should be arranged so that it will be most comfortable and not readily tangled. The best arrangement is that of parting the hair down the back of the head and braiding it into two plaits—one behind each ear. This leaves a smooth surface at the back of the head to lie upon.

The *outfit* of the patient during the labor should consist of a merino vest, long night-dress, a pair of large, roomy, open drawers, and a pair of stockings. While

walking about the room, and until the second stage of labor begins, she can wear a wrapper over the rest of her clothing and have on a pair of bedroom slippers, which can be easily slipped off when she needs to lie down.

The patient should be told by the nurse of the necessity for an *examination* by the physician, particularly if this is her first labor. When the physician comes, the patient should be placed on the bed, near its edge, lying on her back or side, as he may prefer, with her limbs drawn up toward the abdomen. Her clothing should be lifted above the hips, and a sheet, or some light covering, used to protect the lower part of the body from exposure. A chair should be placed for the physician on the same side of the bed, close to its edge, facing the patient as she lies; a jar of cosmolin or vaselin should be brought him, and all the necessary materials provided for the proper cleansing of his hands both before and after the examination; soap, nail-brush, warm water and towels, and some disinfectant solution, as a bichlorid of mercury solution of the strength 1–2000, or creolin, a dram to the pint of water, or lysol in the same proportion.

The *preparation of the room* and *bed* will next require the nurse's attention.

These preparations should be made as quietly as possible. The nurse should have learned beforehand where things are, and she should have had them so arranged that but little will need to be done at the time, except to put them where they will be most convenient for use.

It is well, if the patient is walking about, to have her go into the next room while the bed is made up.

A *single bed* is always the most convenient in the management of a patient, but such are rarely found in private houses. The preparation of a single bed would be as follows: First, the mattress—preferably of hair—covered by a pad and rubber-protective across the middle of the bed, or covering the bed entire. (Rubber army-blankets are used in the Woman's Hospital for this purpose.) The under sheet covers this rubber, and a draw-sheet—a sheet folded four times in its length and placed across the portion of the bed upon which the hips would rest—comes next. (The folded side of the draw-sheet should be toward the head of the bed.) This constitutes the first dressing, or what is known as the "*permanent bed.*" The different articles constituting this dressing are securely fastened down by safety-pins. Over the "permanent bed" comes the "*temporary bed,*" consisting of a second gum blanket, covering the entire bed, a second under-sheet and draw-sheet. Covering these are the upper sheet, blanket, and spread.

After the confinement, the "temporary bed" can be drawn from under the patient, leaving her lying on the "permanent bed." The change is accomplished with much greater ease for both patient and nurse than the changing of the various articles separately.

The *double bed* found in most private houses is arranged as follows: First, the ordinary dressing of the bed, the hair-mattress, pad, rubber-protective, under-

sheet, and draw-sheet. Upon top of this dressing, at the lower right-hand corner of the bed, a "temporary dressing" should be arranged, about a yard and a half square, consisting of a rubber protective, or the paper pad before described, securely fastened down to the bed beneath, and covered, if rubber, simply by a folded sheet, likewise fastened down by safety-pins. If the paper pad is used, an old comfortable or blanket will be needed beneath the sheet. The pillow for the patient should be placed at the upper and inner corner of this square. After the delivery, she can be lifted to the upper part of the bed, and the "temporary dressing" removed.

The sheet, blanket, and spread which are to serve as her covering after the delivery can be kept from soiling during the labor if folded upon themselves several times and carried to the extreme edge of the left side of the bed. Another sheet and blanket may be used as temporary covering during the delivery. It is so important that a patient shall be moved as little as possible immediately after the labor, because of the tendency to bleeding produced by motion, that the nurse should study carefully the best methods of protecting patient and bed from soiling, so that it will be necessary to do but little in the way of changing the clothing.

The piece of *floor oil-cloth* must be spread at the side of the bed, extending from a foot to a foot and a half under the bed.

There should be a *bureau* with a set of drawers, or a closet, with shelves, in the room, given up to the nurse

for the keeping of the various articles she may need, and these articles should be conveniently arranged so that there may be no confusion in obtaining them when required at any time. One drawer or shelf should contain sheets; another towels and napkins and soft, clean muslin or linen rags, to be used as napkins during the delivery; a third should contain changes of underwear for the patient, and a fourth the baby's wardrobe.

A *change of clothing* for the mother should be placed —if it is warm weather—in the sun by a window; if in winter, by the register or stove, so as to be dry and warm should it be needed.

The *baby's suit* should in the same way be aired and warmed. The *baby's basket* should be placed on a chair or stand near the register, with all the necessary articles for its toilet and bath—a *baby's bath-tub* or an ordinary foot-tub, soft towels, nurse's flannel bathing-apron, a little rendered lard in a jar, etc. Two pieces of bobbin, each eight inches in length, should be put in a little vessel containing some bichlorid solution, 1–4000. These, with a pair of blunt scissors, should be placed where they can be conveniently reached for the tying of the cord. Some small squares of soft muslin or linen should be placed where they will be convenient for the immediate cleansing of the child's eyes after expulsion of the head. A flannel blanket or good warm flannel petticoat should be provided for receiving the child upon its birth. The baby's *crib* should also be prepared for its reception.

Beneath the bed there should be *two chambers*—one

for urine and one for the afterbirth, or a tin *basin* may be provided for the latter.

Some *receptacle* should be in readiness for the *doctor's instruments*, should they have to be used. The small pitcher which ordinarily accompanies the modern chamber sets serves very nicely for holding the obstetric forceps.

A *vessel for the patient to vomit in* should be on hand —a chamber, or even a chamber-lid, will do very well.

A *basin filled with a warm solution of bichlorid of mercury*, 1–4000 or 1–2000, should stand near the bed, or, if preferred, the creolin or lysol solution, so that the nurse or physician may repeatedly cleanse the external organs of generation of all discharges during the progress of the labor. The solution in this basin should be frequently changed.

A sufficient number of soft linen or *muslin rags* will also be necessary for this purpose.

Agate, porcelain, or china basins are necessary when bichlorid solutions are used. For creolin or lysol ordinary tin basins will do.

The nurse should never allow anything from the kitchen to be pressed into service for such an occasion. The indiscriminate use of pans, basins, cups, and saucers is certainly vulgar, to say the least. The "eternal fitness of things" should never be lost sight of.

A *urinal*, or a soap-cup, which is a good substitute; a *glass catheter*, and an *English rubber catheter*, No. 8 or No. 9; a *bed-pan*, and the other receptacles for the

various purposes above referred to, may be placed for convenience beneath the bed.

A *towel-rack* near by should contain at least half a dozen fresh towels.

A few *napkins*, a supply of *soft rags*, a *waste-bucket* or slop-jar, with a lid, should be found in the room ; and an *abundant supply of hot and cold water.*

As soon as the patient is known to be in labor, the nurse should go to the kitchen to see that the fire is good, and that plenty of water is put on to boil. An arrangement should also be made by which some member of the family will be prepared to respond to the nurse's call for more hot water when it is required. The *abdominal bandage* for the patient, with the towel containing the sterilized *dressings* and a *pin-cushion* containing safety-pins, should be placed on the stand beside the bed.

A *bottle of whisky* or *brandy*, and one of *hartshorn* should be provided.

A pitcher of cool water and a tumbler should be found in the room, as the patient may need a refreshing drink during the progress of the labor. A feeder is best provided for the patient's use, as she can then drink lying down.

The *arrangement of the patient's clothes* to keep them from soiling during the expulsive stage of labor will require some care on the part of the nurse. The night-dress or vest should be folded or rolled up beneath the arm-pits and fastened with safety-pins over the right side

of the chest. If the patient wears large drawers, no further protection than the cover-sheet may be necessary. Some prefer having a sheet adjusted around the waist, above the abdomen, and pinned under the clothing to the right side, the long end of the sheet which remains, and which should be the anterior part, is plaited up and fastened also beneath the right arm by means of safety-pins. The sheet thus resembles a skirt opened at the right side.

During the Early Stage of Labor the nurse will need to encourage the patient, and by a sensible, quiet, yet cheerful bearing keep her strong. It is of no use for patients to hold their breath and bear down during each pain in this stage, and nurses should never urge their patients to do so. It should be left to the physician to decide when bearing-down efforts are desirable. The pressure of the nurse's hand upon the back during a pain often gives great relief to the patient, while the occasional bathing of the face and hands with cold water is refreshing. Frequent sips of cold water may be permitted.

Nourishment in the form of beef-tea, gruel, milk, and tea may be given from time to time if the labor be long. No stimulants should be given without the direction of the physician.

Vomiting is a troublesome though not necessarily a dangerous symptom during delivery. In fact, the relaxation it produces is often desirable. If it is excessive, however, a little iced soda water may check it.

Cramps in the lower limbs are a very frequent accompaniment of the second stage of labor. Relief may be obtained by stretching the limb straight out, gently rubbing the painful muscles, or grasping and holding them.

Friends and Neighbors should, if possible, be excluded from a confinement room. Their injudicious tales and expressions of sympathy are often absolutely painful. The nurse has to manage this with great tact. She can generally succeed best by stating to the friends that it is the physician's wish she could do so, and her relations toward the physician require that she should implicitly observe his directions. If the nurse does not allow herself to become familiar with her patients, but maintains a quiet dignity in the carrying out of her directions, her requests will generally be observed.

Tact is a magic wand by which human beings can accomplish miracles in the way of subduing the obstinate. Happy is the nurse who possesses it! The best rule for acquiring it is the Golden Rule, "Do unto others as you would that they should do to you." A strict observance of this will insure a kindness of tone and manner in the making of requests which will win consent when it would not otherwise be granted.

Duties of Nurse.—One of the most important duties of the nurse during the confinement is the frequent changing of napkins, draw-sheets, towels, etc., used about the patient. Also the frequent renewal of the antiseptic solutions to be used for her, or for the doctor's hands.

Antisepsis means, literally, "against poisoning," and

implies the careful removal of all sources of poisoning, such as would come from decomposing blood and discharges or dirty articles. The physician's and nurse's hands, therefore, require a special preparation for the labor in their thorough disinfection. During the course of the labor the hands should be thoroughly cleansed with a bichlorid solution whenever they have touched anything unclean, or whenever they come in contact with the genital organs.

Position for Delivery.—The patient may be delivered on her back or lying on her left side. When the physician desires the change of position, the nurse must help the patient to turn on her side and bring her hips close down to the edge of the bed. The upper or right limb will then have to be supported by the nurse, in order to well separate the thighs until the delivery is effected. (When there is insufficient help, a pillow may be used between the knees.) She will have to get on the bed close to the patient for this, and hold the leg at knee and ankle. After the child has come, she should help to turn the patient in the bed, bring a flannel wrap to put the baby in as it lies on the bed before the tying of the cord, and throw a covering over the mother's chest. She should then wipe the baby's eyes with a fine, soft piece of linen dipped in tepid water, or a saturated solution of boric acid; should bring the doctor the scissors and bobbin, and have ready a sheet for receiving the child and a vessel for the afterbirth. She should hold the sheet doubled upon her outstretched arms, the

side toward her being held up by her chin. On receiving the baby with its flannel covering, she allows the edge of the sheet held up by her chin to drop down over the child. She then folds over the hanging ends, so as thoroughly to cover the child, and places the little bundle in a crib, to await further attentions, until the mother has been made comfortable. Should the child breathe imperfectly, the physician will give it his own attention or direct the nurse what to do.

Disposal of Afterbirth.—The vessel containing the afterbirth, if the latter has been detached from the child, may be placed temporarily under the bed, to await the physician's examination. If the cord has not yet been tied, the vessel may be put in the crib with the baby. Many physicians do not tie the cord or navel-string until there is no further pulsation in the vessels.

Attentions after Labor.—Should the physician not desire to do so, the nurse should next attend to the *cleansing* of the mother's external parts by means of soft cloths dipped in a solution of bichlorid of mercury 1–4000, or whatever solution the doctor may direct.

Many physicians make a practice of using a *vaginal injection* of some disinfectant solution immediately after delivery. It will be the nurse's duty to prepare this should it be called for. The "temporary dressing" should be removed from the patient, and she should be gently lifted on to the upper portion of the bed. The binder and dressings must next be applied.

The *binder* must be rolled up to half its length, and

the rolled portion passed beneath the patient's back. It is then caught on the other side and unrolled, straightened so as to be free from wrinkles, and made to encircle the hips tightly. The overlapping ends are then fastened together by means of safety-pins down the front. The middle portion of the bandage should be tightened first, as the firmest pressure should be directly over the upper portion of the womb. The lower portion of the bandage is fastened next, and the pins in the upper portion placed last, as this does not need to be so firmly applied.

The *antiseptic dressings* should next be applied in the order described in the preceding chapter. The napkin is spread out and fastened to the abdominal bandage anteriorly, so as to fit over the convexity of the upper portion of the external organs of generation and extend from groin to groin. Posteriorly it is fastened to the abdominal bandage by but one safety-pin. This makes an "occlusion dressing."

The patient's body-clothing should then be unfastened and drawn down (her drawers and stockings should have been removed with the "temporary dressing"). The coverings of the bed are drawn up over her, and she is allowed to lie quietly until the nurse cleans up the room and makes preparations for washing the baby.

The physician generally remains with the patient an hour after the delivery, taking her temperature and pulse, and watching the condition of the womb, to insure

against danger of hemorrhage from want of proper contractions.

After the doctor leaves, this duty devolves upon the nurse, who should examine the dressings frequently to see that the bleeding is not too profuse, and place her hand over the lower part of the abdomen to feel the womb, which, if properly contracted, should be a round, hard body about the size of a child's head, immediately above the pubic bone, and not reaching higher than the navel. The consideration of the accidents of labor and the care of the infant will be treated in other chapters.

CHAPTER X.

ACCIDENTS AND EMERGENCIES OF LABOR.

Women who have borne children before are apt to have *rapid labors*, hence a nurse should be on her guard when in attendance upon such a patient, watching for the symptoms of approaching labor, and notifying the physician earlier than she would feel warranted in doing with a patient expecting her first confinement. As soon as the nurse suspects that labor pains have begun, she should put her patient to bed. When "bearing-down" pains begin, the patient should not get up even to use the chamber. A bed-pan should be used. The patient should not be allowed, when the pains come on, to catch hold of anything to increase the force of her effort. Above all, the nurse should not *tell* her to bear down.

The strength of the pains is somewhat modified if the *patient is kept on her side.* This position is also safer for the perineum, which does not so directly get the full force of a pain as when the patient lies on her back. The left side is preferable, as it enables the nurse to use her right hand to greater advantage.

Should the child's head come down so that it can be seen at the entrance to the vagina, the nurse should place

herself on the right side of the bed, and as the patient lies on her left side, with the hips well drawn to the edge of the bed, the nurse should gently *hold back the baby's head* during a pain. This is to prevent a tear from occurring by the sudden expulsion of the head. She should favor the gradual stretching of the parts. She should avoid interfering in any way, as in making efforts to enlarge the opening by stretching it with the fingers, etc. All such attempts will inevitably result in harm. When the opening is sufficiently stretched, the head will slip out of itself. The passage of the child's head is rendered easier if the patient's knees are separated by a pillow. The nurse should simply continue to support the head with her hand, and as soon as the head is born her left hand should be placed over the mother's abdomen, resting upon the womb, which may be distinctly felt through the abdominal walls. The *pressure of the hand* acts as a stimulant to the womb and *induces good contractions*. A tendency to hemorrhage is thus averted. The right hand of the nurse should support the child's head. With one finger she should *feel around the baby's neck* to learn whether it is encircled by a loop of the navel-string or cord. If so, she should *gently pull first on one side and then on the other, of the cord*, to see which end gives. This loosens the pressure and prevents the stoppage of the circulation in both cord and child's neck.

When, after a pause, the pains start up again to expel the rest of the child's body, the nurse had better have some one instructed how to hold the womb properly, as

both her own hands will be needed to *receive the body of the child* as it is expelled. The mother herself may be shown how to make this pressure over the womb. If there is no one to make this compression of the womb, the nurse should try to manage the baby with one hand and keep up the pressure over the lower part of the abdomen with the other. The flannel wrap for the baby may be put close up to the mother's hips, and the nurse can manage with one hand to lay the baby down on this, cover it up, and draw it far enough away from the mother's hips to keep it out of the discharges. She should *see that the baby's mouth is free from liquids.* The little finger of her right hand acting as a hook, the end of the finger should be passed in at one corner of the baby's mouth and out at the other corner, thus scooping out any liquids that may have been drawn in during the birth. She should be careful to see that the *cord is not dragged upon* and that *the baby breathes well.* Babies usually cry lustily just after the birth. This should be a welcome sound to both nurse and mother, as it ensures expansion of the lungs. Occasionally, a child will be born with what is known as a "*veil*" or "*caul*"—a portion of the membranes drawn tightly over the face. This may cause death from suffocation unless it is quickly seized by the fingers and torn off, so as to free the child's mouth and nose.

Resuscitation of Baby.—If the baby is apparently lifeless when born, besides the measures spoken of for clearing its mouth of liquids, it may be turned over

on its face, to empty out the discharges from the air-passages, and efforts should be made to *start breathing*. The *head of the child should be lowered*, to keep as much blood there as possible.

The back may be slapped—several short, quick slaps given over the buttocks. A stream of cold water may be poured on the chest just for a moment, and this repeated several times.

If these measures fail, the nurse may *breathe into the baby's mouth*. To do this properly, the baby's nose should be held, the nurse's lips placed closely over the baby's open mouth, as she breathes into it, then the nurse's mouth is removed and the grasp on the nose loosened, the sides of the child's chest being pressed upon to press out the air. The number of breaths given by the nurse in a minute should not at first exceed twelve.

Byrd-Dew Method.—A most valuable method of carrying on artificial respiration, recently revived, is that known as the Byrd-Dew method, the different movements of which are well shown by the accompanying illustration. The operator holds the neck of the child between the thumb and the index finger of one hand, while the other hand holds the child at the nates. The first step (*A*) is to flex the body of the infant along its dorsal surface as much as possible, bending the spine well backward; then gradually to flex it upon its ventral surface, bringing the head in close apposition to the lower extremities (*B*, *C*). In the first movement the diaphragm is pulled down mechanically, as a result of the descent of the

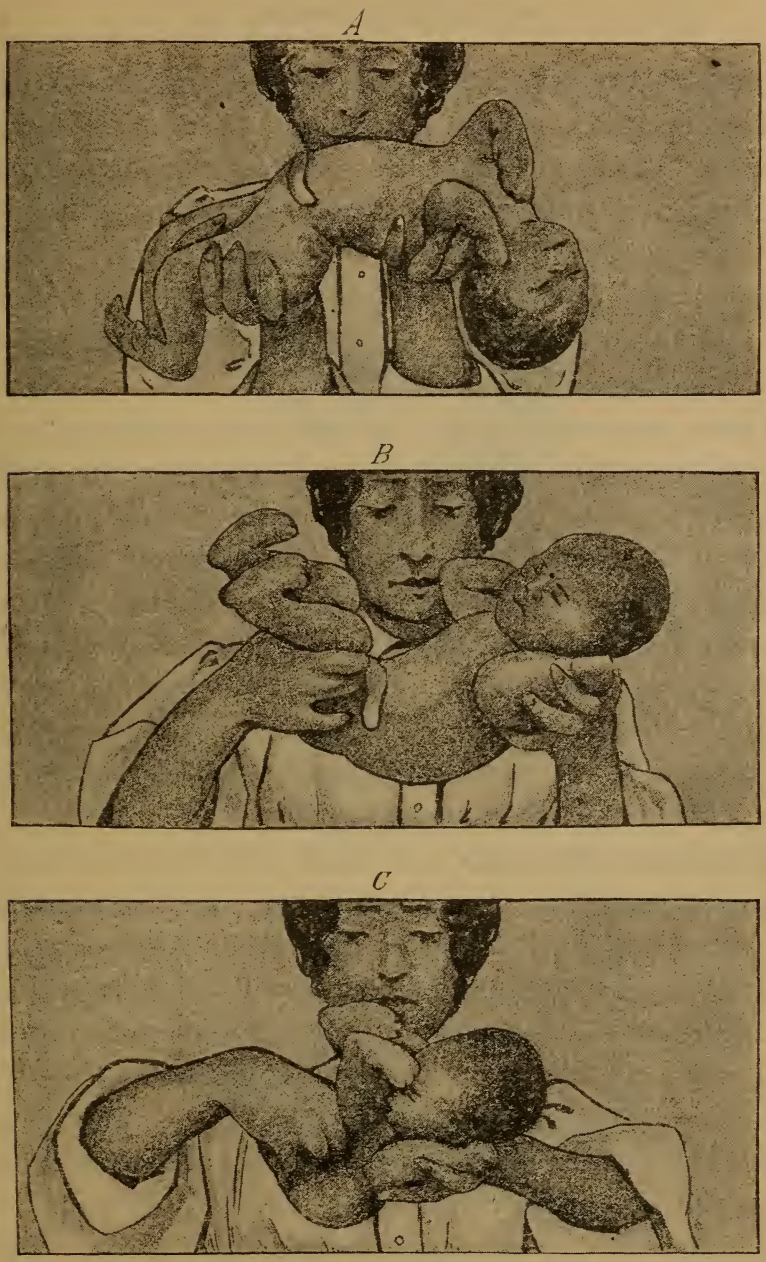

FIG. 15.—BYRD-DEW METHOD OF ARTIFICIAL RESPIRATION.

abdominal organs. We thus imitate *inspiration*, and during the manipulation may often hear air entering the trachea. As the body of the child is bent forward, the diaphragm is pressed upward and the walls of the chest are compressed. Thus the expiratory act is accomplished; and, during it, not only air is driven out, but the mucus and amniotic liquid that may have entered the air-passages.

These movements may be carried on while the surface of the child is kept beneath hot water the greater part of the time—which is a decided advantage over some of the other methods of resuscitation, especially in asphyxia of the second degree, when the surface of the child is very pale, showing it to be suffering greatly from shock. It is always important in such cases to keep the body of the child warm. The movements should not be too rapidly performed—about three times to the minute is often enough.

Schultze's Method.—A third method is known as Schultze's method. In this, as in the Byrd-Dew method, the early and quick tying of the cord is necessary, as it is only of advantage when practised immediately after the expulsion of the child. The method is as follows: The child is seized by the shoulders and upper arms and swung head downward above the operator's head. The weight of the lower part of the body is thus thrown upon the chest, and any liquids which may have been drawn into the air-passages are thus forced out. Being held thus for a time, while the operator counts five, the

FIG. 16.—SCHULTZE'S METHOD OF RESUSCITATION (FIRST MOVEMENT).

body is then brought down in reversed position between the operator's knees. The weight of the lower

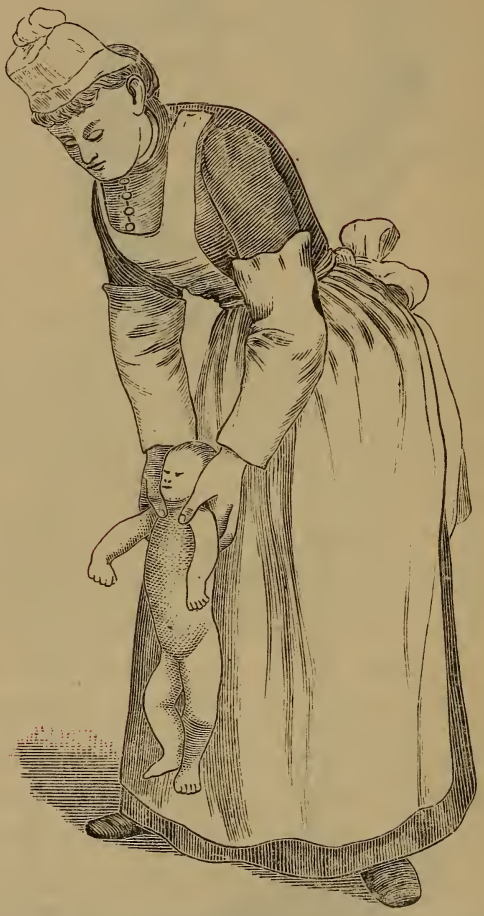

FIG. 17.—SCHULTZE'S METHOD OF RESUSCITATION (SECOND MOVEMENT).

extremities is thus made to drag upon the chest and enlarge its capacity for the entrance of air. These

two movements may be kept up for a considerable time.*

Alternating with artificial respiration, warm baths may be employed from time to time. The temperature of the bath should be 100° Fahr. After breathing is established, the child should be placed in warm wraps, with bottles of hot water around it.

Method of Prochownick, of Hamburg.—A method of resuscitation that has been employed with great success for many years by Prochownick, of Hamburg, in the severer grades of fetal asphyxia, is carried out as follows: As soon as delivered, the child is seized by its feet, as shown in Fig. 18; the child's forehead is allowed to rest lightly on a table or some other surface, the face being extended, so that the chin is thrown well forward and the trachea, or windpipe, freed from all compression. The mouth in this position hangs open. While an assistant holds the child in this position, the operator grasps the chest with both hands (see Fig. 18), and makes compression over it, thus imitating the act of *expiration*, by which discharges drawn into the air-passages may be expelled. A relaxation of this compression permits expansion of the chest, and thus *inspiration* is effected. These movements are carried on rhythmically until natural breathing is established. When an

* The order of these movements as given by Schultze is reversed. The upward movement is practised first in the Woman's Hospital, as it is found that the air-passages are thus best cleared of mucus and discharges before an act of inspiration is encouraged.

assistant can not be had, the manœuver can be carried on as shown in Fig. 19, by means of one hand, although less efficiently.

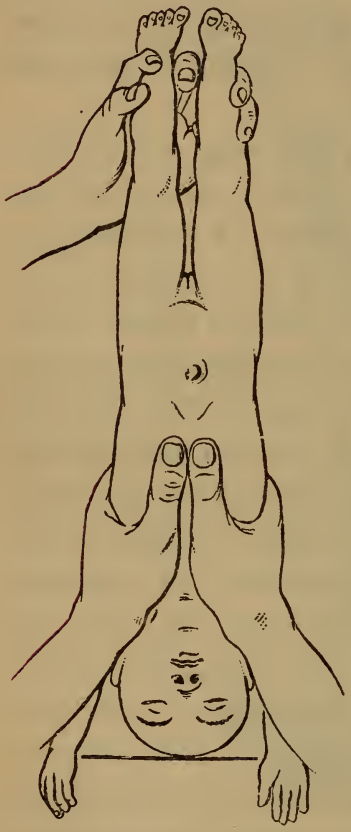

FIG. 18.

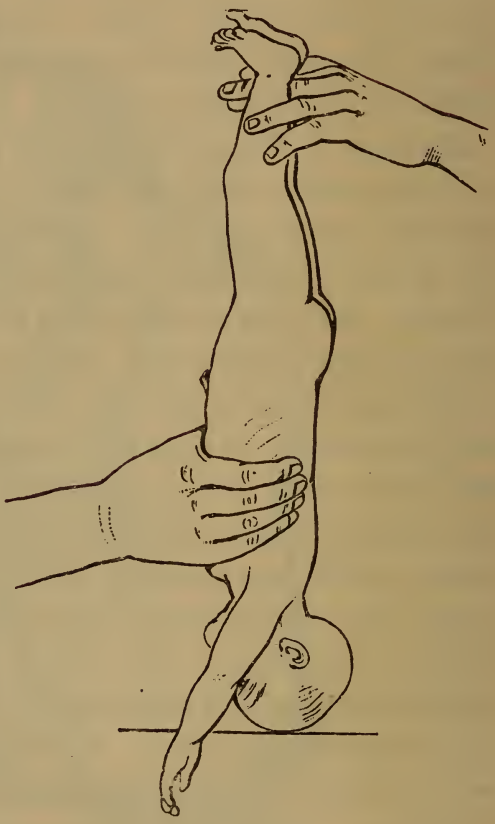

FIG. 19.

PROCHOWNICK'S METHOD OF RESUSCITATION.

Laborde's Method.—Still another new method of resuscitating an infant has been employed of late in France. The tip of the tongue being seized by means of a towel

and held between the fingers, or by means of the ordinary tongue forceps, the organ is drawn well forward and then pushed backward. Rhythmical movements of the tongue are thus kept up until respiration is established.*

Relapses after resuscitation are very common—hence a child will need to be watched very closely after such measures have been employed, until sufficient time has elapsed to fully persuade both doctor and nurse that the action of the respiratory apparatus is normal. For at least twenty-four to forty-eight hours a resuscitated child should have a special attendant, whose business it will be to watch it. If not doing well, such care may be needed for a longer period.

Tying of the Cord.—If all is well with the child, it is best not to tie the cord until all pulsation ceases in it. This measure is thought to save the child some loss of blood. As the pulsation may last for an hour or more after the delivery, the afterbirth is generally expelled before the cord is tied. To tie the cord, two pieces of bobbin, each eight inches long, dipped in a bichlorid solution (1–4000) or in some other antiseptic solution, should be used. The first ligature should be placed three inches from the child's abdomen. The string should be carried underneath the cord. In

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*The Marshall Hall and Sylvester methods of resuscitation are more efficacious when employed for adults than in the case of infants, hence have not been considered in this connection.

making the first tie, two twists instead of one should be taken to keep it from slipping. If the thumbs are placed upon the string in tying, the ligature can be drawn more tightly, and the grasp of the ends of the bobbin is more secure. The second knot is tied the same way. The ends may then be looped, making a bow-knot. The cord should be stripped, that is, the blood remaining in the vessels squeezed out toward the afterbirth, before each ligature is thrown around it. The second ligature is one inch further away from the insertion of the cord into the child's abdomen. After this second ligature is tightened, hold the cord with the forefinger and middle finger at the ligature nearest the child, the thumb and other fingers at the other ligature, and cut it with a pair of dull scissors between these points. The extremities of the scissors are thus made to look toward the palm of the hand, and a sudden movement on the part of the child does not result in the same danger to it as there would be were the points not thus protected. After the cord is cut, squeeze the remaining blood out from the end next the child. The scissors for this purpose are preferably dull, as the more ragged wound thus produced favors the closure of the blood-vessels. This lesson may be learned from nature, the lower animals gnawing off the cord after giving birth to their young, and thus no doubt decreasing the danger of bleeding.

Position for Delivery of Afterbirth.—The best position for the mother during the delivery of the after-

birth is on her back, hence she may be turned after the nurse has satisfied herself that the baby is in good condition.

Twins.—Very occasionally, on placing her hand over the abdomen, after the delivery of the child, the nurse may feel another child there. In this case she must simply keep the womb well contracted by rubbing it gently through the abdominal walls, and wait for nature to go on with the work of expulsion. This baby must be cared for as the other.

The afterbirth generally comes away within twenty minutes after the child's birth. Two or three pains occur, during which the nurse should keep the womb in the middle line of the abdomen and make gentle pressure backward and downward. With her right hand she should seize the afterbirth and membranes and twist them around several times to make a cord of the membranes, so that they may not tear, but all be expelled at once. A discharge of blood and some clots generally follows the delivery of the afterbirth. The nurse's left hand should still be kept carefully over the womb, which should feel hard and firm and should not reach above the navel. If it does not feel firm, rubbing over the lower part of the abdomen should again be resorted to until the round, hard body is felt.

If the afterbirth does not come for an hour, and the physician has not yet come, send for another doctor.

After the afterbirth has come, it should be put in a clean vessel, and, if detached from the baby, put in an

adjoining room for the doctor to examine when he comes. Insist upon his seeing it, to find out whether it is all there. Have the baby removed to its crib and placed on its right side and properly covered.

After-care.—Watch the womb carefully until the doctor comes. If it be firmly contracted, and no more blood be flowing from the vagina, place some dry napkins or a clean sheet under the patient, and wash off the thighs and surrounding parts with warm water containing bichlorid in the strength of 1–4000, and dry with a soft cloth.

Slip the soiled clothing from under the patient, and then apply the binder and dressings, and make her comfortable.

As soon as the doctor comes, report to him the exact time when the waters broke, when the baby was born, and when the afterbirth came. It is always best for a nurse to keep a written report with a statement of what she did. She should not, however, neglect her patient for the purpose of perfecting her report.

Breech Delivery.—Sometimes a nurse has the misfortune to be the only attendant at a breech delivery; that is, instead of the child's head coming first, the breech passes out from the birth-canal. Delivery in this manner is very dangerous to the life of the child. The nurse should do absolutely nothing here, as she would only make matters worse in trying to assist. These deliveries are long enough, as a rule, to give ample time for the summoning of some doctor to take

charge of the case. In all breech cases the child is apt to need to be resuscitated, if it is alive at all; hence plenty of warm water, etc., should be ready for the bath.

Hemorrhage.—Flooding from the womb, or "uterine hemorrhage," is apt to occur either within the first twenty-four to forty-eight hours after the birth, when it is called "primary hemorrhage"; or, it may occur some days after, when it is "secondary hemorrhage." The appearance of blood, either a constant oozing or a sudden gush from the vagina, is, of course, the earliest symptom.

A pulse of over 100 in a patient freshly confined should make the nurse exceedingly watchful in this respect, as it betokens a liability to hemorrhage. Should the flow continue, the patient becomes pale, faint, restless, gasps for breath, and finally dies unless the hemorrhage is checked. A nurse should, of course, have the physician sent for at once, although he may have just left the house, or another doctor should be summoned. In the meantime, her first thought should be of the uterus and its probable condition of relaxation. The bandage, if applied, should be hastily removed, and the hand placed over the lower part of the abdomen. If the womb is not felt, rub vigorously until it contracts and is felt again as a round, hard body. Keep on rubbing and holding. The nurse should never take her hand off the abdomen until the doctor comes. Direct some one else to take the pillows from under the patient's head, have the foot of the bed elevated, to keep the blood in the

head and prevent fainting, which induces heart-clot. Have the foot of the bed placed on the seats of chairs. The patient may be fanned, cold water given her to drink, hartshorn to smell. She should not be allowed even to turn in bed or lift her head. If the doctor has left ergot, one teaspoonful of the fluid extract may be given in a tablespoonful of water. The patient should

FIG. 20.—POSITION OF PATIENT IN HEMORRHAGE AFTER LABOR.

receive this without lifting her head. Plenty of hot water should be on hand, the water in the tea-kettle boiling. If the physician delays his coming and the flow continues, repeated hot-water injections of about 115°–120° should be given into the vagina.

Convulsions may come on during the labor as during the pregnancy. Their management would be the same as that suggested for convulsions during pregnancy.

Other accidents, such as *rupture of the uterus*, or the *coming down of an arm or hand*, or the *navel-string* in advance of the usual part to come first, are conditions in which the nurse can do nothing, except to keep the patient as quiet as she can, and meddle as little as possible until the doctor comes, for whom, of course, she must at once send.

Deportment.—At no time, in the management of a case, should a nurse express surprise or consternation, nor should her manner indicate that she has such feelings. Like a true soldier, she must bravely and quietly face the most critical situations and meet their demands. She should by her manner give the mother to feel that all life's vicissitudes are best met by a quiet self-control.

Fortunately, deaths during delivery in this enlightened age are few; for the methods of averting accidents at such times have been so thoroughly studied that accidents themselves are very rare.

Obstetric Operations.—As operative procedures during the course of a delivery may have to be resorted to very suddenly and unexpectedly, a nurse should have things in readiness should the emergency arise. The especial preparations necessary will consist in the making of a cone of stiff paper, into which a towel is fitted, for the purpose of giving the patient ether; arrangements for an abundant supply of hot water, to be had at a moment's notice; facilities for making up antiseptic solutions quickly; a small pitcher containing a warm one per cent. creolin or lysol solution for the physician's

instruments; English rubber catheter and urinal conveniently at hand; a basin with a one per cent. carbolic or a lysol solution for needles, sutures, and scissors; absorbent cotton in small pads, or soft linen rags dipped in an antiseptic solution, to be used instead of sponges; sufficient protection for the floor at the side of the bed; and preparations for resuscitation of the infant.

The position of the patient for most obstetric operations will be across the bed, with her hips well over the edge. This is called a "*cross-bed.*" Physicians generally call simply for a cross-bed, in desiring the nurse to make preparations for an operation, and she should understand that this refers to the arrangement of protectives and sheets, adjustment of pillow, and placing of patient in proper position. Should there not be a sufficient number of persons to have one hold each leg, chairs should be placed in such a way at the side of the bed as to support the widely separated feet. A chair for the physician should be placed between these, facing the bed. As there is usually some assistant to give the ether, the nurse will need no help in keeping the limbs apart and in giving the physician any other aid she can in the supply of the various articles as they are needed. Should the physician desire her to give the ether, her whole attention should be devoted to administering the anesthetic and seeing that the patient keeps in good condition. Strict watch should be kept over the respirations and the pulse. Difficult breathing, or a stoppage in the respirations, weakness or irregularity of the pulse,

blueness of the face and lips, should at once be called to the physician's notice, the ether cone being removed from the patient's face. After the patient is once well under ether, it takes but little to keep up the anesthesia, so that the nurse should use the ether sparingly; a few drops every few minutes upon the towel are, as a rule, sufficient. After etherization the patient may vomit, and there will be greater tendency to bleeding because of the relaxation induced by the anesthesia, hence the nurse should exercise special watchfulness and care over the patient. The vomiting is often relieved by a mustard paste over the stomach, while the bleeding may be controlled by the hand placed over the lower part of the abdomen, which, by making pressure over the womb, insures good contractions. After the nausea is relieved, ergot, if prescribed by the physician, may be given.

CHAPTER XI.

MANAGEMENT OF THE LYING-IN.

Immediately after the delivery it is necessary that the patient should have rest. The room should be *kept exceedingly quiet* and the shades drawn down so as to subdue the light.

The patient may be allowed to sleep, but the nurse, during this time, should watch her very carefully, as there is a liability to bleeding when the sleep is too deep, owing to the general relaxation induced by sleep. She should draw the bedclothes up at one side from time to time, to see how much blood is lost.

There should be no unpleasant *smell* about a confinement room, plenty of fresh air should be allowed to enter, and all discharges should be at once removed from the room.

While the patient sleeps, and after the child has received proper attention, the nurse should place the *soiled sheets, towels, and all articles stained with blood in cold water to soak.*

The *afterbirth*, also, should be disposed of. If in the country, it should be buried in a hole dug in the yard, two or more feet deep. It should never be thrown

down a water-closet or privy. In the city it is best to burn it at night. It may be put in the range or stove and well covered up with coals. Clots of blood may safely go down the water-closet, as they readily dissolve.

To return to the *soiled clothing* left after a confinement —though a trained nurse will not often be called upon to attend to the washing of these articles, there will be times when it would be better that she should do so, both to save the patient expense and trouble and to prevent their lying about too long. At any rate, she should know how it should be done. Should the clothing be put to soak before the blood has dried into it, and allowed to remain for a few hours, the water being changed as often as needed, the washing will not be difficult.

As a rule, it is not best that a nurse should leave her patient or the baby long enough to attend to this wash, hence it is advisable to have it put out or done by some one else in the house. The soaking ought, however, always to be attended to by the nurse, because it facilitates the subsequent washing.

In the after-care of the patient the nurse should attend to the *washing of the mother's* and *baby's napkins*. She should, if needed, wash the baby's flannels and slips.

Visitors.—For a week a newly-confined patient should see *no visitors*. Even the husband should not remain in the room long at a time. No painful or exciting news should be communicated to the patient, as a distressing form of mental trouble to which lying-in women are

prone may be thus induced. This is known as "puerperal mania."

Food.—After the patient rouses from her first sleep she is generally hungry. The nurse should have learned from the physician before he left what he would prefer her having. A cup of warm milk or tea—not too hot—may be given directly after the confinement when ether has not been taken, and this followed in three or four hours by a light meal, as toast and tea or gruel. With regard to the diet of the lying-in, nurses must be prepared to follow the rules of the physicians for whom they work. Some physicians allow considerable variety in the food from the beginning.

The following directions concerning the diet are given to the nurses of the Woman's Hospital: "It should be remembered, in the diet of the lying-in woman, that the amount of liquids, should the breasts or nipples threaten to give trouble, must be limited, not only until after the secretion of milk, but also until the supply of milk adapts itself to the demand, for the first five or six days after the confinement.

As soon as the patient is made comfortable after the birth, she should have a cup of warm milk or weak tea, or warm water and milk.

First meal-time: Plate of milk toast or bowl of oatmeal gruel, or saucer of wheat germ or boiled rice.

Second meal: Cup of weak tea or warm milk, dry toast, or milk toast, or water toast, or soda crackers soaked in hot milk.

Third meal: Saucer of oatmeal mush or wheaten grits, with a cup of tea or warm milk, with Graham biscuit or dry toast. In normal cases a little stewed fruit may be given with the evening meal, even on the first day.

Forenoon, afternoon, bedtime: Lunch, a cup of warm milk, with a piece of dried bread or Zwieback.

Second Day.—The same as above.

Third Day.—The same, with the addition of stewed apples or baked apples for supper, if not given before.

Fourth Day.—Breakfast: Soft-boiled egg, dried bread, stewed fruit, and cup of milk or weak tea.

Dinner: Plain beef or mutton-broth, dried bread, and farina or junket.

Supper: Baked apples or stewed prunes, saucer of wheat germ, and Zwieback.

Fifth Day.—Breakfast: Cup of weak coffee or cocoa, mutton-chop, oatmeal mush, dried bread, and a sweet orange or ripe apple.

Dinner: Beef or mutton-broth or oyster-stew, baked potato, stewed tomatoes, dried bread, farina, junket, or rice.

Supper: Stewed fruit, Indian-meal mush, and Zwieback.

Sixth Day.—Ordinary plain diet, avoiding salads, sour fruit, fried or highly-seasoned meats, fancy desserts, or sweets of any kind.

This holds good of all subsequent meals. The above dietary will require to be modified when special indications arise. Should the patient's temperature rise to

100° Fahr., or above, she should be kept on liquid diet, as milk and beef-tea alternately every two hours until the physician directs otherwise.

As liquids favor the secretion of milk, liquid food should constitute a large proportion of the nourishment taken by nursing women throughout the lying-in, provided there is not a tendency to over-secretion. The diet should be plentiful and nutritious, but selected carefully with reference to its digestibility. As the patient must remain inactive for some time, it will not do for her to eat the starchy vegetables, pastry, or warm breads, for all these require very active powers of digestion.

A nurse should thoroughly understand the art of cooking, and be able to provide her patient with palatable and nutritious dishes, daintily and prettily served on a tray, until, with the physician's consent, she takes her place at the family table. Even then a nursing woman will need to receive some nourishment, as gruel, beef-tea, milk, etc., between the regular meals, for she must not only provide for herself, but for her child.

Duration of Lying-in.—The lying-in lasts six weeks. During this time the organs of generation are returning so far as possible to their former condition. It is important that the patient should have rest, and for at least two weeks of this time should be in bed.

Involution.—The process of changes by which the womb shrinks to its normal size is known as "*involution.*" This process is favored by the patient lying as much as possible on her back, so that the womb does

not incline too much to one side or the other. The patient may be carefully propped up a little by pillows on the third or fourth day, so that she shall be in a semi-reclining position. This facilitates the drainage of the uterus. Care must be taken not to permit her to move herself too much, as a hemorrhage may be thus started. The progress of involution is determined by the height of the uterus as appreciated by palpation over the lower part of the abdomen. Under the most favorable conditions the uterine fundus will be found to correspond in height with the following points :—

Twenty-four hours after labor,—on a level with the umbilicus.

Second and third day,—midway between umbilicus and symphysis pubis.

Fifth and sixth day,—three fingers' breadth above the pubic symphysis.

Ninth and tenth day,—on a level with the pubic symphysis.

A full bladder or a full rectum will prevent proper contraction and decrease in size of the uterus, as also will subinvolution from former uterine disease of any kind, or from inefficiency of the uterine muscular tissue.

The Lochia.—The discharges of the mother continue about two weeks, and they are called the "*lochia.*" For the first twenty-four hours they are blood; the second and third day, watery blood; from the fourth to the sixth day they have a greenish-yellow coloration, and from the tenth to the twelfth day they become

white. This white discharge may continue for a long time after the confinement. The character of the discharge will indicate the process of involution, hence the physician should see daily the napkins or dressings removed from the patient. Soiled napkins and dressings should never be kept in the patient's room, but in some closed vessel, as a clean chamber or a slop jar, with a close-fitting lid, in another room. The existence of the least odor about the discharge should at once be brought to the physician's attention. If *napkins* are used, they will need to be changed during the first day about *every two hours*, sometimes oftener; the second and third day, about every three hours; the fourth and fifth day, every four hours; until, by the tenth day, about three changes are sufficient. The antiseptic dressings are changed, as a rule, every three hours until the discharge ceases. If it be very scant, a change once in six hours may be sufficient. These *antiseptic dressings should be burned.* The napkins should be soaked in cold water until the blood is well out of them, and then thoroughly washed and boiled. The boiling is sufficient, if properly done, to render them aseptic, but, as an additional precaution, they may be wrung out in a 1–2000 bichlorid solution before drying. *The patient should be washed off each time the napkin is changed with a warm antiseptic solution*, as 1–4000 of the bichlorid of mercury, or a lysol solution of 1 per cent. Care should be taken not to irritate the parts. Instead of using a soft cloth to wash off the parts, the water may

be poured in a small stream over them, and a soft, dry cloth pressed gently over them to remove all moisture. Especial care should be taken where there are stitches not to pull them in any way.

Bathing.—One daily washing of the entire body is, as a rule, desirable. The doctor's advice, however, should be asked concerning the matter. This wash, when given as a sponge-bath, need not exhaust the patient, nor cause too much movement of her body. The patient should never feel chilly during this bath; should she do so, the bath must at once be stopped. The bath should, of course, be given under cover. The increased activity of the skin necessitates especial cleanliness, and the daily bath is found, when properly given, to be very refreshing. Frequent changes of bed and body clothing, too, are necessary—the body clothing, if possible, daily until the discharges cease.

Attention to Bladder.—The bladder is frequently paralyzed after confinement, as a result of the pressure to which it has been subjected during the birth. When it is filled beyond a certain limit, it may respond to the irritation and a little urine be voided, but the bladder not be emptied. The nurse can tell by the amount passed whether the patient has probably emptied the bladder or not. The secretion of urine early in the lying-in is very free, hence the quantity passed should never be scant. By placing the hand over the lower part of the abdomen, the bladder may be felt as a soft tumor on one or the other side, above the pubic bone,

the womb being felt as a harder mass pushed to the opposite side.

The *catheter* should not be used without the physician's sanction, but a nurse should never forget to ask very particularly about this matter before he leaves the house after the delivery. It is generally undesirable to allow a patient to go longer than six hours without freely emptying the bladder. As over-distention of the bladder prevents proper contractions of the womb, and as a relaxed womb is a frequent cause of after-pains, it is best to have the bladder quite frequently emptied during the first twenty-four hours. Hence, if the catheter is permitted to be employed, it may be well to use it about three hours after delivery for the first time (the physician having used it, if necessary, immediately after delivery). Its subsequent use should be limited to about once in six hours, unless its more frequent use is demanded by the interference with the contractions of the womb caused by over-distention of the bladder. The patient should be encouraged to make a trial to urinate as soon as possible, so that the use of the catheter may be entirely dispensed with. Great care is necessary in the use of the catheter: 1st, to see that the instrument is thoroughly clean and kept clean; 2d, to see that none of the vaginal discharges are carried into the bladder during its introduction; 3d, to do no injury to the mother's parts or give her needless pain.

The instrument, a glass catheter, should be thoroughly boiled if there is any doubt about its being aseptic.

When withdrawing it the outer extremity should be kept lowered, so that all the urine remaining may flow out from it, and no sediment settle in the closed end to become a source of contamination at some future time. It should then be thoroughly washed in hot water, which should be allowed to flow through it from the inner toward the outer extremity, carrying out any sediment from the urine, and it may be kept during the intervals of its use in an antiseptic solution—a two per cent. solution of creolin, carbolic acid, or lysol. To prevent the carrying of the vaginal discharges into the urethra the parts should be carefully washed off with an antiseptic solution, either by irrigation or by means of a soft cloth, before the insertion of the catheter.

Some patients object to the use of the catheter by sight, because of the exposure which it entails. We give, therefore, the method of its employment by touch, —although its *use by sight is greatly to be preferred*, as subjecting the patient to less danger from the introduction of discharges into the urethra.

Passage of Catheter by Touch.—The index finger of the nurse's right hand (which should each time be thoroughly cleansed in an antiseptic solution) should be slipped into the vagina as far as the second joint, and made to follow the anterior vaginal wall down in the median line to the vaginal entrance, when a little elevation of the surface will be felt, immediately above which the orifice of the urethra is to be found. If the finger be held with its palmar surface upward and resting lightly

upon this elevation, the finger being held horizontally, a glass catheter slipped along it will enter the small orifice of the urethra. Should the extremity of the catheter seem to meet with any obstruction after its entrance into the urethra, a slight withdrawal and rotation of the instrument will generally carry it in. The use of the catheter need not involve the slightest exposure of the patient. A cultivated touch will enable a nurse to do better than by sight in its use. Hence, it may all be done under cover.

Difficult Micturition.—For the first twenty-four to forty-eight hours after delivery, particularly if the labor has been a difficult one, there is a considerable swelling of the parts, which offers a mechanical hindrance both to voluntary urination and the passage of the catheter. Great gentleness is therefore required in the necessary manipulations. This swelling in an ordinary case should disappear at the end of twenty-four to forty-eight hours. Should the inability to urinate persist after this, it is in all probability due to the condition of paralysis before referred to. Especial medication by the physician, as the use of muscle and nerve tonics, fomentation over the lower part of the abdomen and external generative organs, hot water in a bed-pan, placed beneath the patient's hips, may serve to stimulate voluntary urination. The attempt to induce this should be made each time before a resort to the catheter, as the constant use of the latter will only keep up the difficulty.

Constipation.—Constipation due to paralysis of the

bowels caused by the pressure of the gravid womb upon the bowels is very marked during the lying-in.

It is desirable to have the bowels moved by injection before the end of the first twenty-four hours, and, thereafter, to secure a daily movement by such means as may be recommended by the physician in attendance. Regulation of the food will do much to correct the habit of constipation, as a laxative diet composed mainly of brown bread, oatmeal gruel, prunes, etc. An occasional enema of warm soapsuds may be needed, or from a teaspoonful to a tablespoonful of glycerin may be injected into the lower bowel, or a glycerin or gluten suppository be given. If these means do not suffice, some medication may be needed. The laxative chosen by the physician will depend upon the condition of the breasts, as well as its liability to affect the milk.

Should the breasts be over-distended, a saline laxative will be preferred. Thus, two teaspoonfuls of Rochelle salts in a half-tumblerful of cold water may be given, an additional tumblerful of pure water being taken after it. Sulphate of magnesia or Epsom salts may be used in the same way, or a teaspoonful of cream of tartar may be taken night and morning in a cup of sweetened water.

When the secretion of milk is scanty, a vegetable laxative is to be preferred, as rhubarb, aloes, or cascara sagrada.

At times there is such impaction of the contents of the lower bowel that an oil injection will be needed. A gill of cotton-seed oil may be introduced into the lower

bowel and retained for three or four hours, after which a small soap and water injection will lead to a thorough evacuation of the bowel.

The Care of the Nipples and Breasts is very important. If this matter has received proper attention during the pregnancy, there will be comparatively little trouble during the lying-in. It is important to keep the nipples clean. Milk should not be allowed to collect about them, hence immediately after nursing, while they are swollen and soft, they should be washed; a soft piece of linen may be used and cold water, or a saturated solution of boric acid, after which they may be dried with a soft cloth. This should be repeated after every nursing.

If the skin of the nipple be unusually thin, it is best to avoid having the baby pull directly upon the nipple until the milk flows freely, hence a *nipple shield* should be used, at least for the first two or three days, if not longer.

Should the nipple become sore at any time, the nipple shield should again be resorted to and used until the sore is healed.

Some *application*, as a ten per cent. solution of tannic acid in tincture of myrrh, balsam of Peru, or a weak solution of nitrate of silver, according to the order of the physician, may be painted with a camel's-hair brush over the cracks in the nipple while it is soft and swollen, immediately after nursing. A very healing application consists of a paste made of equal parts of bismuth sub-

nitrate and castor oil. This can be kept constantly applied in the intervals of nursing. This may be wiped off when the time for nursing arrives, but need not be entirely removed, as it cannot hurt the baby. This paste or the application of a little oil or cold cream to tender nipples will often prevent their cracking.

For any nipple shield to work perfectly it must fit tightly, hence an entire rubber shield is not so good as some others. Some shields are made of part metal and part rubber, others part rubber and part glass. The cheapest are the ordinary glass shields with rubber nipples. They cost about fifteen cents and are quite as good as those that are higher priced.

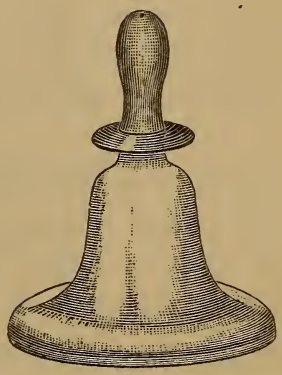

FIG. 21.—NIPPLE SHIELD.

A shield is not good if it allows the nipple to be drawn out too far. In the intervals of nursing the rubber nipple should be kept in cold water after having been turned inside out and thoroughly cleansed with a brush.

Nipple protectors are worn only in the intervals of nursing, or during pregnancy, for shaping the nipple.* These may be made of lead, glass, or wood. Leaden protectors keep the nipples soft in the intervals of nursing, and have a healing effect upon the abrasions and cracks

* See Fig. 6, page 44.

of a tender nipple. Unless care be taken, however, to cleanse the nipple thoroughly before the baby nurses, there is danger of lead-poisoning. Nipple protectors of glass and wood, being open at the top, are intended more to keep the clothing of the patient off the tender nipple.* The nipple may, in addition, be kept moist in the intervals of nursing by the application over it of a

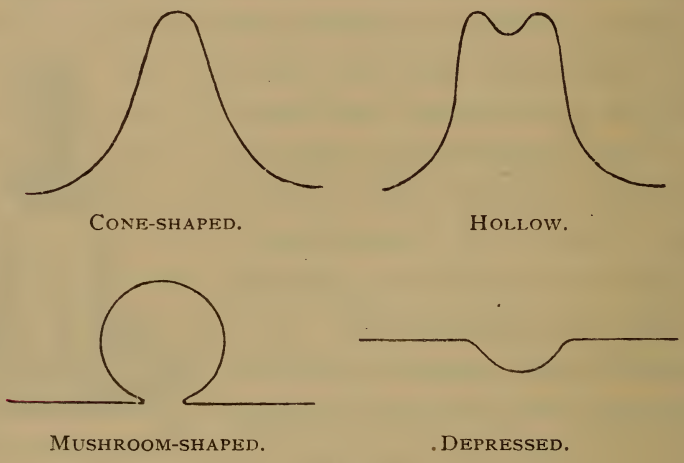

Fig. 22.

piece of absorbent cotton saturated with a mixture of one part glycerin to two parts water. The oily preparations are to be preferred.

Shape of Nipples.— Nipples vary much in shape—

* There is a form of nipple protector made of glass which also acts as a reservoir to catch the overflow of milk in cases where it flows involuntarily from the nipple. This is useful in preventing the constant wetting of the patient's clothing.

thus they may be cone-shaped, hollow, mushroom-shaped, and depressed.

The *cone-shaped nipple* is the best, as it can be readily seized by the child's mouth, and the pressure of the baby lips does not constrict the nipple at its base, so as to prevent the free escape of milk from the mouths of the milk ducts which open at the top of the nipple. The *mushroom-shaped nipple* has so narrow a base that the free flow of milk may be thus prevented.

The *hollow nipple* is apt to get sore from two causes: first, by the forcible suction made by the child in emptying the breast; second, by the accumulation of milk in the depressed portion of the apex.

The *depressed nipple* differs from the last class in the fact that there is no elevation of the nipple above the surface of the breast, but where the nipple should be there is a corresponding depression. Very little may be done for such a nipple, and all efforts to make a nipple by drawing it out must generally be abandoned, as they simply irritate the tender skin.

Bandaging of Breasts.—It is best when nipples of this class exist to abandon the idea of nursing the child, and prevent the accumulation of milk in the breasts by bandaging. This should also be done where there is a previous history of breast abscess—the breast affected being thus bandaged to prevent the attempt at secretion by the gland.

The firmest bandage is the *figure-of-eight of the breasts*, which may be applied to one or both of the breasts

according to need. If it cannot be used, the wide, straight bandage, similar to an abdominal bandage, may be employed, or the straight bandage with straps to fasten it over the shoulders, according to the pattern used by Dr. Garrigues, of New York. Were the milk

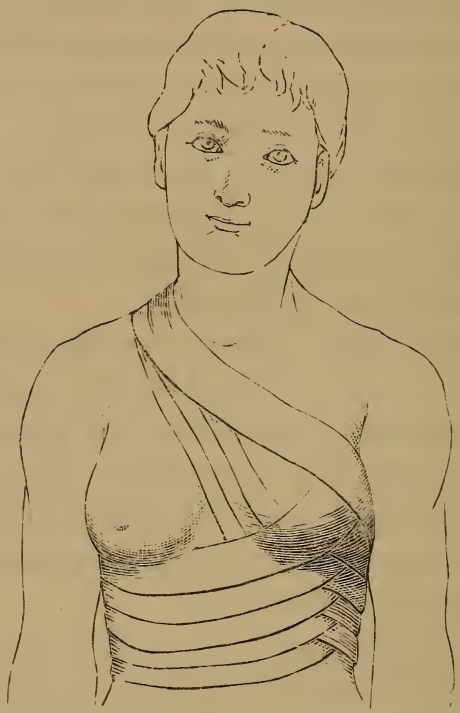

FIG. 23.—FIGURE-OF-EIGHT OF ONE BREAST.

permitted to accumulate in the breast, and there be no ready outlet for it, "caked breast" would be apt to ensue.

"**Caked Breast**" is caused by a collection of milk in one or the other part of the breast, due to blocking up of a milk-duct. The indications for its relief are to *empty*

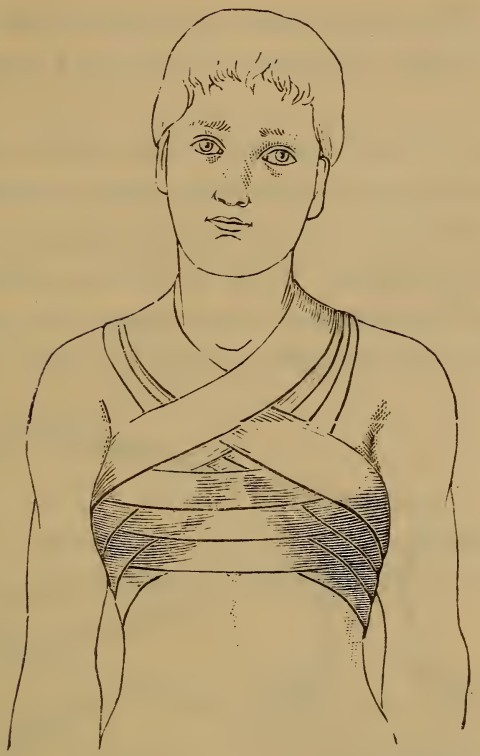

FIG. 24.—FIGURE-OF-EIGHT OF BOTH BREASTS.

FIG. 25.—GARRIGUES' BREAST BANDAGES.

the breast. The milk may be drawn out *by a baby* if there be a proper nipple, or by the use of the *breast-pump.*

The breast may be *gently rubbed* with warm oil and stroked from the base toward the nipple to aid in carrying the milk toward the mouths of the milk-ducts. Camphor liniment is sometimes used as an inunction, alone or combined with laudanum; but unless it is the intention to help to dry up the milk, camphor should be avoided.

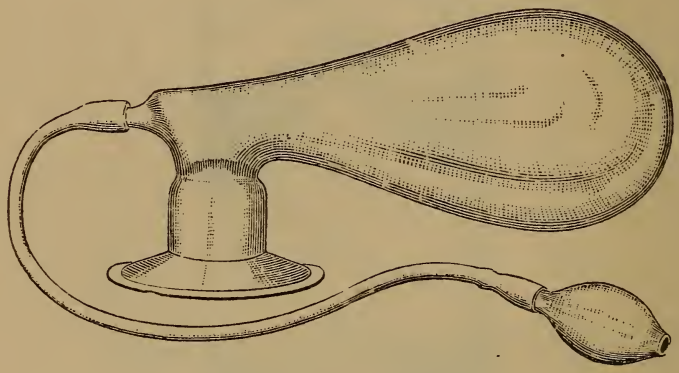

FIG. 26.—BREAST-PUMP.

The use of *fomentations* before rubbing greatly helps to soften up the breast. By fomentations is meant the application of flannels wrung out in hot water, constantly changed as they cool. These applications should be continued for fifteen to twenty minutes at a time. After their use if the baby be put to the breast or the breast-pump be used, the milk will generally flow quite freely.

Breast-Pumps.—Those breast-pumps are the best which depend for suction on the power of the mouth.

The Phœnix breast-pump is the one generally preferred.

They may be used by the nurse, or a patient may use such a pump herself should a nurse not be present. Hand-pumps are not good, as too much force is apt to be used in making suction—the nipple may thus be torn off. Where a breast-pump cannot be had, a simple contrivance may be resorted to for emptying the breasts which is often very effective. A bottle filled with very hot water may be emptied of its contents, and while still hot the mouth of the bottle closely applied over the nipple. As the bottle cools, the nipple is drawn up into the neck of the bottle, and the flow of milk induced.

Pendulous Breasts.—When the breasts are pendulous, *handkerchief bandages*, properly applied, make a good support.

Their application is as follows: "The base of the handkerchief, folded as a triangle, should be placed obliquely across the chest and under one breast, with the apex or summit of the triangle over the corresponding shoulder; one angle is carried over the opposite shoulder, the other under the axilla, or armpit, of the same side. These ends should be tied on the back of the shoulder, and the apex of the triangle pinned to them." (Smith.)

Should both breasts need support, a similar bandage may be applied to the other breast. To prevent the base of one or both of these bandages from slipping up, the ordinary handkerchief bandage has been modified in the Woman's Hospital by the addition of a belt around the waist, of a strip of muslin or ordinary roller

bandage, to which the base of the bandage may be fastened by safety-pins.

A *simple straight bandage*, with a compress to lift the outer, pendulous portion of each breast, is sometimes used, darts being employed to shape it properly to the

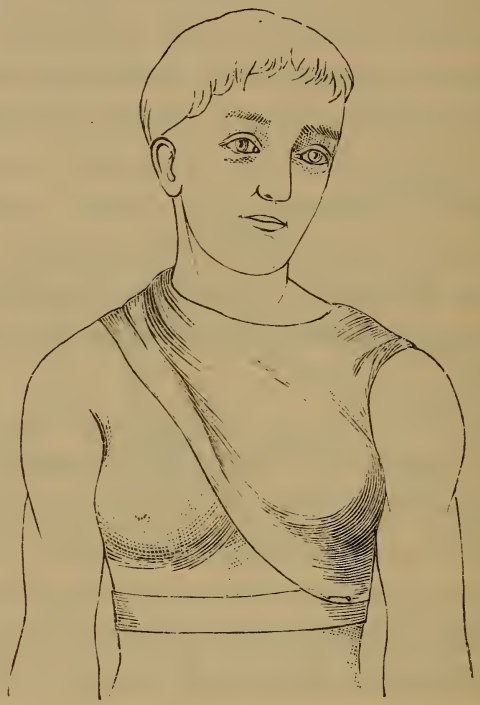

FIG. 27.—HANDKERCHIEF BANDAGE FOR BREAST.

person. This makes a firmer support than the handkerchief bandage. It should be made of unbleached muslin or some firm material.

Another bandage, which has the advantage of not requiring to be removed when the baby nurses, is the

double-Y bandage, used in the Boston Lying-in Hospital. The manner of putting it on is thus described by Dr. Worcester: "A single T-bandage is first made by folding

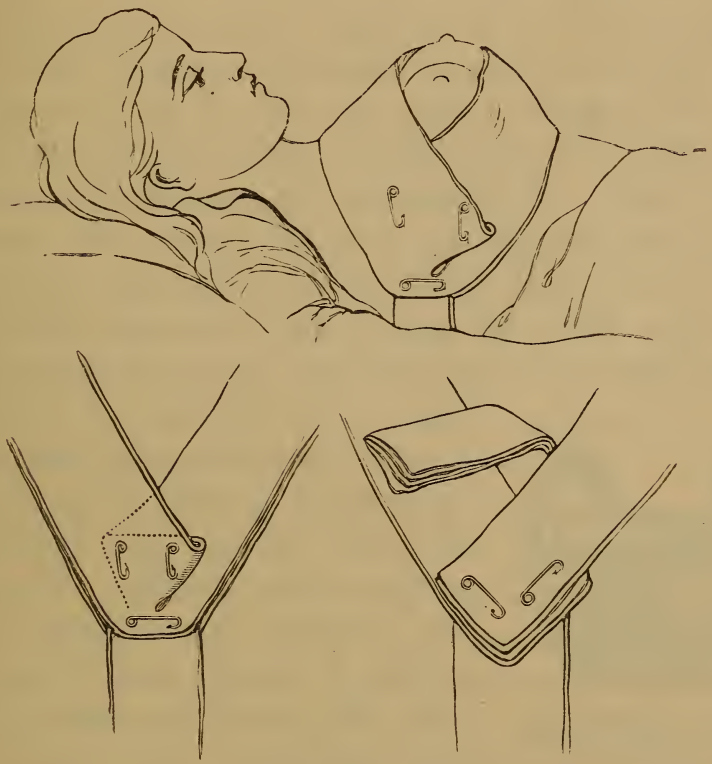

FIG. 28.—WORCESTER'S Y-BANDAGE.

The upper figure shows the double-Y breast bandage in position; the lower left-hand figure shows how the bandage is made. The third figure shows how the double-Y bandage is completed by fastening the arms of the Y to the tail-piece on the patient's opposite side.

a napkin lengthwise so that for an average-sized patient it shall be 32 inches long by 3 inches wide. At the middle of this, and at right angles to it, is pinned, just between

its folds, a napkin of the same size, similarly folded. This T-bandage is next made into a Y-bandage, by making a diagonal fold in the middle of the cross-piece and fastening the corners of the plait with safety-pins on the outside. The bandage is now ready to put on. The tail-piece is passed under the woman's back, snug up to her armpits, so that the fork of the Y just clears one nipple when that breast is held upward and inward on the chest. The tail-piece on the other side is carried up on the chest directly over the breast. The arms of the Y are then brought over the chest, one above and the other below the breasts, and their ends pinned to the tail-piece, so as to hold both breasts in similar position. A compress of soft linen may be placed between the bandage and the outside of the breasts, and also between the breasts, to prevent their chafing. To keep the bandage from slipping down straps of muslin may be passed over the shoulders and pinned back and front. To keep it from slipping up, it may be fastened to the abdominal bandage." The bandages referred to are very useful while the patient is in bed, but when she begins to sit up and wear ordinary clothing they will be found to be cumbersome. Some such breast support as is shown in Fig. 29 may then be found very useful.

FIG. 29. — OBSTETRICAL BREAST SUPPORT, WITH KNITTED BOSOMS.

Gathered Breasts.—There is nothing in the care of

a lying-in patient for which a nurse receives more blame than in the occurrence of gathered breasts. Abscesses will sometimes come, however, in spite of all precautions, even before confinement. Extreme watchfulness and a prompt reporting of any symptoms of beginning trouble, as chilliness, hardness of the breasts, sore nipples, etc., will do much to avert them. It must never be forgotten that *sore nipples*, by offering an open surface upon the mother's body, may become *avenues of septic infection*. Dirty hands or dirty garments touching these surfaces or poison from the baby's mouth may thus enter the mother's system. One of the most serious forms of inflammation of the breast may thus result from blood-poisoning. If the breast has once gathered, there will be a tendency for it to gather again. Should an abscess threaten by beginning inflammation of the breast, the treatment will, of course, be directed by the physician. What milk is in the breast must be drawn out, and some means used to prevent further secretion. The use of an ice-bag to arrest tendency to inflammatory involvement is advised by some, the breast being at the same time elevated and compressed by a bandage. Belladonna breast plasters were at one time much used, the circular breast plasters being obtained at any drug store. The belladonna ointment spread on patent lint, shaped to the breast, is preferred by some physicians. Simple *compression of the breast by a firm bandage* is generally sufficient, without the aid of other measures, in

the checking of the secretion after the breast has been emptied.

Should the breast gather, *lancing* is inevitable, and the sooner the better, so that a nurse should keep the physician carefully informed as to the condition of the breast. Flaxseed poultices or, far better, antiseptic poultices (consisting of several layers of sterilized gauze wrung out of hot sterile water and covered by gutta-percha tissue), may need to be applied for a time, both before and after lancing. These poultices, to do any good, should be applied as hot as possible. The nurse can test the heat of the poultice by laying her cheek against it. If she can bear this application without finding it too hot, the patient will also probably be able to bear it. If the poultice be made of flannel it will not lose its heat as quickly as when made of muslin. The poultices will require changing about once in two hours, or often enough to keep them warm; and should be kept up until the abscesses point and are evacuated. The nurse should encourage the patient to have an abscess lanced, and should have prepared, at the time of the operation, the antiseptic solution preferred for the physician's hands and for washing out the abscess cavity, a syringe, if possible, a pus-pan having a concave side to fit closely under the breast, some charpie (linen threads arranged in bundles for packing abscess cavities), soft towels, and some absorbent cotton to be used in place of sponges for cleansing the breast. Before the opera-

tion, the breast should be washed off with an antiseptic solution. Between the applications of the different poultices the breast should be similarly washed off by the nurse. The physician will probably desire to wash out the abscess cavity daily so long as the discharge of pus continues, in which case the nurse should have everything in readiness at the time of his expected visit.

Galactorrhea.—Sometimes milk runs constantly from the breasts. Much may be done to prevent this by regular nursing. If it persists, the amount of liquid in the food should be restricted. Sometimes the milk runs from the opposite breast while the baby is nursing at one. There is no way to prevent this. Some mothers collect it as it drops in a small bottle or cup and feed it to the baby.

Insufficient Milk.—If the mother has only sufficient milk for half the day, the baby had better be artificially fed by day, the breast milk being reserved for the night, as giving less trouble when the care of the child devolves upon her.

After-pains are the same as labor-pains, being caused by contractions of the womb. They are called after-pains because they occur after confinement. A woman, after the birth of her first baby, seldom has after-pains. They may occur with varying severity in women who have previously borne children. If the bladder and the bowels are properly attended to, and the womb kept well contracted, the patient is not likely to suffer much from after-pains.

These pains seldom last over the second day. Should they do so, it is probable that the patient is threatened with some inflammation.

The occurrence of after-pains should, of course, be at once reported to the doctor, and such measures for relief carried out as he may suggest.

The womb will be found to be in two entirely different conditions with the occurrence of these pains. Hence, we divide the pains into two classes, the "*expulsive*" and the "*spasmodic*," or "*neuralgic*."

With *expulsive after-pains* the womb, as it is felt through the abdominal walls, will be found to be large and soft, and the patient will often pass clots. The bladder will be frequently found to be over-full and the womb pushed high up or to one side. The indications are to empty the bladder and to secure good contractions of the womb. After the bladder is emptied the pain may be relieved by the application of a hot poultice over the lower part of the abdomen, and simple fluid extract of ergot may be given, if desired, by the physician (½ teaspoonful every three hours), until the womb is well contracted. A nurse should never give any medicine without the direction of the physician. Before entire relief is obtained it may be necessary for the physician to break down and wash out the clots within the womb.

Intra-uterine Injection.—The nurse should slip drawers and stockings on the patient in preparation for this operation, as she may need to lie across the bed with her hips drawn to its edge. A bed-pan, syringe,

antiseptic solutions, receptacle for waste water, and rubber protective for bed and floor should be prepared.

When *spasmodic after-pains* occur, the womb is felt in the lower part of the abdomen as a firm, round ball of stony hardness. This is caused by a spasm of the muscle fibers in the womb. The remedies which would help expulsive pains would only aggravate this condition. Something must be employed which will quickly relax the spasm. The most efficient agent is chloroform liniment, which may be applied on flannel over the lower part of the abdomen. The acute counter-irritation thus produced will give relief. Should the spasm be very severe, the physician may apply pure chloroform sprinkled on blotting-paper, for a few seconds, over the lower part of the abdomen until it well reddens the skin. Should no chloroform liniment be at hand, a warm flax-seed poultice may help to some extent, though not so efficient, as a rule.

A Careful Report should be kept by the nurse, from which the physician can learn all that has transpired in the intervals between his visits.

Sheets of paper, ruled and having headings, as in the accompanying diagram, are used in the Woman's Hospital.

Observation of Symptoms.—The occurrence of pain, any complaint of chilliness or a decided chill, rise of temperature, rapid pulse, sleeplessness, headache, want of appetite, etc., should be carefully noted and brought to the physician's attention.

DIAGRAM SHOWING NURSE'S REPORT. ABOUT ONE-HALF SIZE.

Patient's Name..... *No. of page*.....

DATE.	HOUR.	PULSE.	TEMP.	RESP.	FOOD.	MEDICINE AND TREATMENT.	URINE.	BOWEL MOVEMENT.	REMARKS.

Name of Nurse.....

For the first week or ten days it is well to take the *temperature* and *pulse* in the morning, at noon, and in the evening; after which, if the patient is doing well, the morning and evening temperature and pulse will be sufficient.

Should the slightest complaint of *chilliness* be made, the nurse should place extra covers around the patient, hot-water bottles, if necessary, to warm her up, and at the same time give her a warm drink, as a cup of hot tea, or even hot water.

The *temperature* should always be taken after a complaint of chilliness, and taken quite frequently, as every hour or two, when, if it be found to be rising, a note should at once be sent to the physician, who may want, under the circumstances, to see the patient at once or to institute some new line of treatment. *Pain* may be temporarily relieved by the application of a hot flaxseed poultice. Grave inflammatory and septic troubles are ushered in by such symptoms as the above, hence no time should be lost in notifying the physician of their occurrence.

Puerperal Fever.—The use of blisters, poultices packs, vaginal injections, and medicinal remedies required in the treatment of the various forms of "puerperal fever" must, of course, be in exact accordance with the physician's directions.

Such troubles are generally septic—that is, arise from blood-poisoning; and one very important duty of the nurse will be to see that the patient takes

sufficient nourishment to combat the poison in the blood.

Stimulants should never be given without a physician's advice, but when ordered great care should be exercised in their faithful administration. Egg-nog, milk-punch, whiskey-punch, wine-whey, milk in the various liquid and semi-liquid preparations, beef-tea, broths, etc., will be called for. The nurse should be ready with devices to tempt her patient to eat, and thus give the most important aid to the arrest of the disease. The support of the strength, with extreme cleanliness and thorough antisepsis, will do much to arrest the course of the terrible maladies due to blood-poisoning.

Puerperal Ulcers.—The existence of any sores about the vulva or vagina, when discovered by the nurse, should at once be reported to the doctor. These are especially dangerous when they take on a grayish surface, as this indicates that they have already become infected by poison. If the disease is not arrested here, the whole system may be involved.

Milk Leg.—A swelling of one or both legs sometimes comes on after delivery. It is ushered in by acute pain and lines of redness accompanying the swelling—the vessels of the groin, under the knee, or in the leg, will often feel like cords. This is due to an inflammation involving the veins. Sometimes blood clots form in the veins, which may be dislodged and carried to the heart and lungs, when they are the source of the gravest danger. Sometimes abscesses form in the leg.

The great danger of clots being carried in the blood current makes absolute quiet imperative. The patient should lie flat on her back, and the limb be elevated on pillows or on an inclined plane such as the fracture-box used in certain fractures of the lower extremity.

The application of some soothing ointment, as iodin and belladonna ointment in equal parts, over the cord-like veins, a hot flaxseed poultice being kept over the ointment, will help to relieve pain and diminish inflammation. The whole limb should be kept warm by a wrapping of cotton batting. The limb is most comfortable when slightly bent at the knee-joint. Should the weight of the bed-clothing cause pain, a cradle may be made of barrel hoops for lifting them off the limb. The cradle is also very useful in cases of peritonitis when the same difficulty exists.

Bed-sores.—Lying-in women should not be subject to bed-sores, but should some complication occur, as in some form of blood-poisoning, or should some other disease attack the patient during this time, necessitating long lying, special care is necessary to prevent bed-sores. The parts of the body subjected to most pressure should be kept thoroughly dry and rubbed with alcohol and alum (a saturated solution) once or twice daily. A little cosmolin may then be rubbed into the skin, or some drying powder, as zinc or starch, may be used. When a sore occurs it must be dressed, according to the physician's order, with zinc ointment or cosmolin. All pressure should be kept off it, if possible, by

the adjustment of pads and pillows or a rubber-ring cushion.

Puerperal Mania is a form of mental trouble which may affect lying-in patients, particularly when they are exhausted from any cause, whether it be mental worry or physical ill-health. In true mania the patient may be violent and very difficult to control. In the melancholic type of this trouble she is exceedingly depressed, distrusts her best friends, and cannot be roused to take an interest in her surroundings.

As soon as it is noticed that the patient's mind is not well balanced, *the baby should be removed from the room*, only being brought to the mother when asked for. The nurse should then keep a close watch over it, as one of the chief symptoms of this trouble is a strong aversion to the baby and desire to destroy it.

It should never be forgotten that an insane patient *should not be left alone for a moment.* The insane are very cunning, and though apparently asleep may be but watching their opportunity to indulge in some mad freak, as jumping out of the window, dashing down the stairway and out of doors, etc. The windows, therefore, should be in some way protected. A nail or screw may be driven into the window-casing so as to prevent the raising of the sash, except so far as ventilation requires. The door had best be kept locked, the nurse keeping the key.

The *treatment* will mainly consist in keeping up the nourishment and in kind, gentle, tactful management.

The patient should be made to interest herself in outside things, by the judicious turn given to the conversation by the nurse, by engagement in some kind of fancy-work, or in games which will help to divert the mind.

She should not be crossed, neither should she be deceived. The nurse should so manage her as to inspire a thorough confidence and liking toward her on the part of the patient. If she has not these, she had best give up the case, as she will not be able to help the patient.

Should the patient absolutely refuse to eat, the physician may direct the nurse to introduce the food into the stomach by means of a rubber tube passed through the nostril and down the esophagus, or gullet. Care should be taken to do no injury in the introduction of this tube, which should be well greased with cosmolin and made to follow closely the direction of the passage, it is made to enter. A funnel is then connected with the outer extremity, through which the milk or broth, etc., may be poured into the stomach.

Should the patient be exceedingly restless, and disposed to jump out of bed, to her own detriment, she may be fastened into the bed by means of a sheet, doubled lengthwise, placed over the middle portion of the body from the arm-pits to below the knees and carried under the bed, to be fastened either beneath the bed or to one side of it. The feet may be bound together loosely at the ankles by a piece of roller bandage and fastened to the footboard of the bed. The hands may be bandaged together (being placed the one on top of

the other) by means of a roller bandage, though this is not necessary except when they are used to do herself injury. When patients are so violent as to need such restriction, however, it is better to have them removed to some institution for the insane as soon as possible, where there is better provision made for their management. The use of sedative remedies by the physician will generally prevent the necessity for resorting to such extreme measures for confining the patient in ordinary cases.

Medicines should, of course, never be left in the patient's room, even when the nurse is there, unless under lock and key. The duration of this malady varies from weeks to months, in some cases becoming chronic. Convalescence is generally very gradual. Patients may have long periods of lucid thought, and seem apparently well, only to unexpectedly return to their vagaries; so that the nurse should never relax her quiet vigilance while in charge of the case.

The First Sitting-up.—The old time-honored belief that a woman should sit up on the ninth day is subject to many exceptions, which should be understood by the nurse as well as by the physician. The *true gage is the progress of involution.* This may be determined by the height of the uterus (which ought to sink behind the pubic bone before the patient is allowed to sit up) and by the character of the discharges. So long as there is any blood in the discharges the patient should not sit up, for this is an indication that involution, or the shrinking of the womb, is not going on properly. This con-

dition is known as "*sub-involution*," and it neglected may lead to chronic disease of the womb. The use of the recumbent or semi-recumbent posture, frequent hot injections given by the nurse, or remedies administered by the physician, may be necessary to overcome it. Let the patient understand the wisdom of her confinement to bed under such circumstances, and she will generally yield gracefully to the necessity. The first sitting-up should be in bed, the patient's back being supported by a bed-rest. Should no bed-rest be found in the house, a chair turned upside down, with its back toward the patient, over which a pillow is placed, offers a very good substitute.

After sitting up in bed for a day or two, from a half-hour to an hour if there be no discharge, the patient may have her flannel wrapper and stockings and bedroom slippers put on, and be allowed to sit up in an easy chair. It must be remembered that this is the time when the patient will be most susceptible to cold, therefore every precaution must be taken to prevent her exposure to draughts. Should the patient seem to grow tired before the half hour or hour is up, she should be put back in bed. The interval for sitting up may be gradually increased from day to day, until she is up the greater part of the day. No going up and down stairs should be permitted until the physician sanctions it, which is, in ordinary cases, about the fifth or sixth week, when one such journey a day is generally permitted.

Order Board.—That there may be no misunderstand-

ing between physician and nurse, the orders of the physician in every case should be immediately set down in writing when given, so that by constant reference to them the nurse may do her full duty by the patient. It is well, for this purpose, to have a piece of paper ruled so that at the right side there shall be two columns, one headed A. M., the other P. M. The stated hours for the administration of medicine or carrying out of treatment may then be placed opposite the special directions for each, and a pencil mark be drawn through the figure representing the hour when the matter has been attended to.

An *order board*, as used in the Woman's Hospital, is prepared as follows:—

ORDERS FOR TREATMENT OF MRS. RICHARDS, OCT. 10, 1889.

	A. M.	P. M.
Full breakfast, dinner, and supper, ...	6	12, 6
A teaspoonful of medicine (light or dark), ...	6.30	12.30, 6.30
Sponge bath, ...	10	. . .
Lunch of gruel or beef-tea, ...	9	3
Glass of milk at bedtime, ...	. .	8
To sit up half an hour with bed rest, ...	. .	2

Nurse's Name.....

A fresh board should be prepared for each day's work. In ordinary cases, which run an uneventful course, these boards, with the hours crossed off, serve the purpose of a report as well.

CHAPTER XII.

CARE OF THE NEW-BORN INFANT.

The mother being made comfortable after her delivery, the nurse should turn her attention to the infant.

First Toilet.—Everything needed for the baby's *first toilet* should be collected and placed conveniently at hand, near the register, stove, or open fireplace.

The nurse should put on a flannel apron or pin a crib-blanket or flannel petticoat over her lap. The best bath-apron is one consisting of two pieces of flannel fastened to the same waistband. The lower piece is the one on which the baby lies; the upper serves as a covering. A pitcher of warm water and one of cold must be provided, the baby's bath-tub being placed near them, the baby-basket, suit of aired clothing, and jar of rendered lard or oil within reach. The nurse should pick the baby up with its wraps and place it in her lap as she seats herself on a low chair or stool near the fireplace.

The baby will be found to be covered over portions of its body by a white, greasy substance, called "vernix caseosa," or "cheesy varnish." This substance is found in greatest quantity on portions of the body subjected

to friction while in the womb, hence it serves to protect the child's skin.

Some kind of grease is needed for its removal. Rendered lard and oil are the best. Cosmolin is not so good, as it is stiffer than the other two—not so soluble a fat. Lanolin is good. All this cheesy substance must come away with the first washing, as, if left, it irritates the skin and produces sores. The most difficult parts of the body to cleanse are the folds or creases. The nurse should take a piece of lard about the size of a walnut, rub it over the palms of both her hands, and then, taking the child's head between her hands, rub the grease thoroughly in, giving especial attention to the ears. A second piece of lard, of the same size, will be needed for the neck, shoulders, arms, chest, and back; a third piece for the groin, external generative organs, and lower limbs. The creases and folds about the generative organs, especially of a girl baby, need very careful cleansing. When the baby has been thus thoroughly gone over, the nurse should take the corner of a dry sheet and rub off the grease. Many physicians prefer not having the baby bathed after this greasing. It may then be dressed and laid in its crib.

Should the bath be preferred, the nurse should wrap the baby up in her flannel apron, draw the bath-tub toward her, and prepare the bath, filling the bath-tub about one-third full of warm water at a temperature of 100° F., tested by the thermometer. A wall-thermometer, costing fifteen cents, may be obtained at any drug-

store for the purpose. The baby is then placed in the tub, its entire body, excepting its head, being immersed for a moment or two beneath the water. The nurse should keep the baby from slipping from her grasp by allowing its head to rest against her left wrist and hand, while the fingers of the same hand obtain a secure grasp under the child's left arm-pit. After the dip, the child is lifted out on to the nurse's lap again, where a soft, warm towel should have been spread for its reception. In this it should be wrapped and thoroughly dried. Great care must be taken to see that the arm-pits, groins, and other parts of the body where creases exist are entirely free from moisture. After the first bath, the child receives, as a rule, but a sponge-bath daily until the cord drops, when the daily plunge-bath may be given. The baby should always be thoroughly washed with simple warm water over the parts of the body soiled every time the napkin needs to be changed. Soap does not need to be used. Its frequent use would irritate the skin, and the parts can be perfectly cleansed without it.

The use of *powder* in the folds and creases of the body is not essential. The main object is to keep rubbing surfaces dry, and should the nurse properly attend to this duty after the bath, this, with the use of flannel next the baby's skin, ought to be sufficient to effect the purpose. Should a powder be desired, some very fine, unirritating powder, such as plain talcum, might be used. Many of the scented powders contain substances which are irritating to the skin.

Dressing the Cord.—After the baby has been dried, the stump of the cord or navel-string should be attended to. Make a loop of the stump, doubling it back upon itself, and tying it tightly by means of the ends of the bobbin left from the first ligature. Slit up a square of soft sterilized linen or gauze to its center. Put this around the cord, which is slipped through the slit (the slit looks upward toward the child's head), fold over the ends, and turn the whole upon the left side. The gauze may be used in the form of a narrow strip and twisted around the cord so as to thoroughly infold it. Some physicians will direct that no dressing be placed around the cord. In fact, sometimes there is no ligature placed around it, but it is simply well stripped of the blood and jelly-like substance which help to compose it, and thus allowed to dry.

The placing of the loop of cord with its dressings on the left side of the child's body is to avoid pressure upon the liver, which is larger than any other organ in the infant's body at birth, so large, in fact, as to extend quite down to the navel. The abdominal bandage is put on over the dressing to hold the latter in place.

A drying powder, consisting of one part salicylic acid and five parts starch, is an antiseptic application thought by some to hasten the drying of the cord. Boric acid is sometimes used in the same way.

A clear substance exudes from the cord as it shrinks which wets the dressings, so that it is necessary to change them quite often the first day or two. The ab-

domen around the navel should be carefully washed with a boric acid solution every time the dressing is changed. A cord kept dry by the frequent change of dressings will have no odor about it, and will drop, on an average, by the *fifth day*. The base from which the cord dropped may continue moist for a few days, and is best dressed by placing a small compress of antiseptic linen or gauze over it. To prevent this from sticking, a little boric acid powder may be dusted over the moist surface. The navel-dressing is kept in place by the application of the flannel binder, which should be carefully adjusted, so as not to compress the abdomen too tightly. After the bandage is fastened, the nurse's hand, used flatwise, should be easily slipped in between the bandage and the baby's skin. Should safety-pins be used in fastening the bandage, they should be placed in front and not at the back, or they may cause the baby discomfort in lying. The bandage fastened by the tapes, which is simply wound around the body, is safer on this account.

Great importance should be given to the proper care of the navel, as it offers an open surface on the child's body through which poisonous matter may be taken into the blood, causing "infantile sepsis," or the blood-poisoning of infants.

Meconium.—Before the dressing of the cord, a napkin should have been laid beneath the hips of the infant, as there is very apt to be a free discharge of a dark, greenish matter from the bowels shortly after the birth. This is known as "meconium." It should always come

away within the first twenty-four hours after birth, and may continue to come at intervals for three or four days. When it does not come away freely the baby may suffer considerable pain. A soap suppository or a small injection of warm water will bring about relief, causing an evacuation of the bowels.

This substance is very difficult to wash out of napkins, hence it is a good plan to have a soft piece of old muslin placed inside the napkin to catch the discharge. This may be burned when removed.

Cleansing.—The baby should be washed every time the napkin needs to be changed, even if it is only wet. Warm water should be used. A napkin should never be used twice without washing. The habit of hanging up a napkin wet with urine, allowing it to dry, and using it again, is not only filthy, but unsafe, as it renders the napkin irritating to the skin and a source of possible septic infection. For the same reason a napkin should be changed as soon as it is wet or soiled. Though the work may be irksome, a nurse should not weary of it; for it is only by eternal vigilance that the child can be kept in good condition.

Clothing.—After the application of the binder and napkin, the baby's under-vest, or little, long-sleeved, high-necked flannel shirt, should be put on. This should be fastened in front by safety-pins, or small, flat buttons or tapes.

If the shirt is too large, folds should be made at the sides to make it fit better; never in the back, because

of the ridge this would produce under the surface upon which the baby lies.

The socks come next, and then the flannel slip, constituting the only other garment the baby *needs*. The petticoat with slip, or Gertrude suit, may be used instead, if desired.

Eyes and Mouth.—The eyes and mouth should each be washed out with a separate soft piece of linen dipped in warm water.

The Baby's Hair, if it has any, may be brushed with a soft baby-brush. No comb should be used, as the scalp is too tender.

After-care.—The baby should then be placed in its crib, on its *right side*, and warmly covered. The weaker the baby is, the warmer it will need to be kept. Stone jars, when filled with hot water, are nice for this purpose placed around the child, but care should be exercised not to let these bottles be placed so near as to cause a burn.

In another chapter we will consider the care of premature infants.

The weighing of the baby devolves often upon the nurse. A steelyard being provided, the nurse may place the nude child in a napkin, tied or pinned securely at the corners. This napkin may be swung on to the hook of the steelyard as it is held up. The pointer will then indicate the number of pounds weight. The average weight of a new-born baby is 3250 grams (about seven pounds).

In the Woman's Hospital the ordinary grocer's pan-scales are used, the weights being represented in grams. The daily weight is taken and recorded on a card which hangs by a ribbon or string to the baby's crib, so that its daily condition may be carefully watched. For a comparison of the approximate weights in the metric and avoirdupois scales, I append the following table of equivalents :—

RELATION OF AVOIRDUPOIS TO METRIC WEIGHTS.

AVOIRDUPOIS POUNDS.	GRAMS.	AVOIRDUPOIS POUNDS.	GRAMS.
1	453.592	6	2721.55
2	907.18	7	3175 14
3	1360.78	8	3628.74
4	1814.37	9	4082 33
5	2267.96	10	4535 92

For the first three or four days a baby will lose weight, as it does not take in enough nourishment to make up for the loss it sustains by the newly acquired activity of bowels, bladder, and skin. At the end of the first week the baby should weigh about what it did at the birth. After that it should gain, on an average, thirty grams a day (about one ounce) for the first two months of its life.

A Sponge bath is sometimes given the baby at the close of the day, when its clothing is changed for the night; but this is not necessary, if it has been properly attended to when the napkins have been changed. The fresh clothing at night is always essential.

The Baby's Crib should have no rockers. All un-

necessary swinging, rocking, and jolting of babies only serves to make them nervous and more troublesome to take care of. A convenient and inexpensive crib and bath-tub combined, especially for traveling, is described in one of the numbers of "Babyland," thus: "The frame is made something like a cot-bed. Straight pine sticks may be used. The legs, one inch and a half square by thirty inches long, are crossed and pivoted in

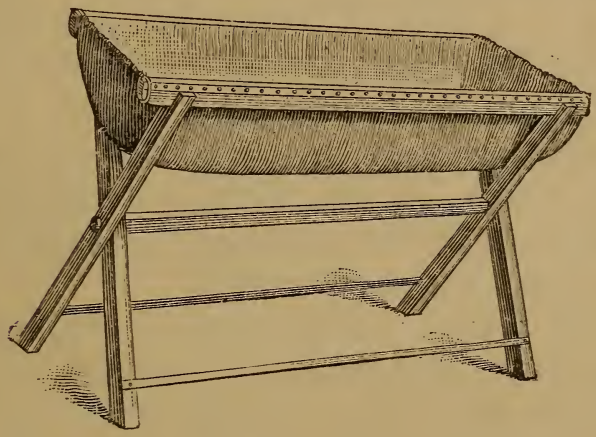

FIG. 30.—HOME-MADE BATH-TUB AND CRIB.

the middle on a center bar. The side bars, one inch by two inches, and thirty-six inches long, are securely fastened to the top of the legs. Smaller bars join the legs near the bottom to stiffen the frame. A piece of heavy rubber-cloth, one yard and a quarter long and thirty inches wide, has an inch-wide hem on each end for a casing, and is drawn up to eighteen or nineteen inches with heavy braid (a leather strap would probably be better).

This makes the ends of the tub. Along the side bars of the frame are tacked with brass-headed tacks the sides of the cloth, the braid (or rubber straps) being securely fastened to the ends. A small plait in the cloth at each corner, about an inch from the end, gives a fuller shape to hold the water (when it is in use as a bath-tub). The tub (or crib), when not in use, can be folded and set away out of sight, or it may be carried in the bottom of a large traveling-trunk when on a journey. The frame may be made of walnut or cherry, with turned legs, etc., if so desired. A pillow put in the tub makes a comfortable and portable crib for the baby.

Children should never sleep in the same bed with their mothers. It is unsafe because there is danger of their being overlaid, and it is unhealthful because of the discharges, breath, etc., of the mother.

Tubs for Babies.—Many varieties of *tubs* are made for babies, of tin or agate-ware, or porcelain. A painted tin foot-tub serves a good purpose while the child is small. These may be placed upon a bath-stand or low chair to prevent the necessity of too much stooping on the part of the nurse while bathing the baby.

Training of a Baby.—A baby may be trained to be contented and happy as it lies in its crib. If from its earliest days it is taken up simply to be fed, and to receive the necessary attentions for keeping it clean and comfortable, it will not become the little tyrant a child develops into when foolishly spoiled by its mother.

Feeding of Infants.—Babies should be fed but once in *two hours during the day*, and every *three hours during the night*, unless premature, when they can take less, and should be fed every hour. An interval is necessary between the feedings in order that the stomach may rest and be prepared properly to carry on its work of digestion. Hence, the habit some mothers have of letting babies nurse whenever they cry simply serves to produce indigestion, as well as to spoil the child.*

For its *first nursing* the baby may be put to the breast an hour or two after the labor, if the mother is sufficiently rested. The nipples should, before each nursing, be carefully washed off with a solution of boric acid. The early secretion of the breasts, known as "colostrum," helps to rid the baby's bowels of their dark, tarry contents, as it is laxative. It is important that the breasts should be used alternately in feeding the infant, as this allows a longer time to elapse for the accumulation of milk. For the first day or two the baby needs comparatively little food. Should it seem to be hungry, however, and the mother unable to satisfy it, a teaspoonful or two of warm water or diluted peptonized cow's milk, prepared according to the suggestions to be given later, may be administered at regular intervals.

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* It has been observed that when the periods between nursing were short the milk was more condensed, a fact which throws light on the dyspeptic phenomena occurring in babies who are fed too often.—*Rotch.*

Before and after each feeding, the baby's mouth should be carefully washed out with a piece of soft linen dipped in warm water or a saturated solution of boric acid. This is to prevent the particles of milk remaining in the mouth from producing soreness by souring.

Two or three times daily a baby should be given a teaspoonful of *cool water to drink*, as babies suffer from thirst just as their elders do. The water assists, also, in keeping the bowels from becoming constipated. The water should be boiled and kept in an air-tight flask.

Insufficient Milk.—Should the mother not have sufficient milk for her baby, it may have the bottle every other time, the additional food being selected with reference to the child's age and powers of digestion.

The Wet-nurse.—When a mother has no milk, the best substitute is a good wet-nurse. A wet-nurse should always be carefully examined by a physician, that her freedom from disease may be fully determined before she is employed. She should be between twenty and thirty years of age, and have good, not necessarily large, breasts, well-shaped nipples, and an abundant supply of milk. The condition of her own child should be considered, whether it be thriving or sickly, and especially whether there be any evidence of special disease. It is well, too, to try to get a woman who has had more than the one child, as a woman who has borne several children has, by experience, learned to understand and manage babies.

Lactation.—The first milk that comes in the breast, and which appears in any quantity, about the eighth month of pregnancy, is called "fore-milk," or "colostrum," from a word which means "glue." It is turbid, yellowish, gluey, alkaline in reaction, and sours easily. It differs from true milk in having a higher specific gravity or weight; it also contains more salts and more albumin, and is more difficult to digest. It is laxative in its effect upon the baby's bowels. Physicians not infrequently examine a specimen of this secretion under the microscope, to learn what the prospect is as to the mother's nursing the child. If, in the last two months of pregnancy, the colostrum is scanty, and under the microscope there are but few oil globules, the patient will probably have poor milk and scant in quantity. If the colostrum is abundant but thin, like gum water, not gluey and without yellowish streaks, it is probable that the milk will be watery and not nourishing. It may be either scanty or abundant. If the colostrum be plentiful, with yellowish streaks and full of milk globules, the milk will be abundant and good in quality. The secretion of colostrum may continue from six to eight days. If it continues longer, it is a great disadvantage, and the mother may have to give up nursing because of the child's inability to digest the nourishment thus afforded.

Human milk should have a specific gravity of 1020–1034. It is slightly alkaline in reaction; that is, it will

turn red litmus-paper blue, and it contains the following ingredients:—

Water,	87–88
Total solids,	13–12
Fat,	3–4
Albuminoids,	1–2
Sugar,	7.0
Ash,	0.2

—*Rotch.**

It differs from cow's milk in having a higher specific gravity, more solids, less water, and one-fifth the amount of albuminoids. The milk retained longest in the breast —the first milk drawn by the baby at each nursing—is the thinnest; the last, the richest. When, therefore, a baby seems to suffer from indigestion because of its mother's milk being too rich for it, it should take the first secretion from each breast at each nursing instead of drawing all the milk from one breast. One or two teaspoonfuls of water given the baby before each nursing have the same object. Should it, on the contrary, not seem to thrive because of the food not being sufficiently rich, the thin milk should be pumped or drawn out of each breast by the nurse or mother before the baby is allowed to draw. The two breasts are estimated to contain about two ounces of milk at one time.†

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* According to the analyses of Dr. H. Leffmann, the percentage of fat rarely reached 4, ranging between 2.5 and 3, as a rule, while the albuminoids were usually a fraction over 1 per cent.

† The use of from 1 to 5 drops of cod-liver oil, according to the age of the child, given three times daily, has been found to be a valuable supplement to the food when a mother's milk lacks richness.—*Dr. A. E. Broomall.*

The question of *how to increase the secretion* of milk is a very important one. The best way is by a judicious regulation of the mother's or wet-nurse's diet. There are no medicines which are entirely satisfactory for the purpose of stimulating the secretions. Therefore a nurse can do more than a doctor in this line by careful feeding of her patient. A mixed diet is the best for making milk. Beer and all kinds of liquors, as porter, etc., do more to fatten the mother or nurse than to make milk; therefore they are to be avoided. In weakly women with poor appetites the malt liquors and bitter tonics are sometimes of advantage in stimulating the appetite and thus promoting a greater secretion of milk. The special diet for a nursing woman is laid down in another chapter. Good human milk should be three per cent. cream.*

To determine the character of milk—human or cow's milk—an instrument known as the *lactometer*, or *milk-tester*, may be used, aided by the microscope.

The Lactometer consists of a cylindrical glass vessel, or beaker, which should contain the milk to be tested, and a specific gravity glass, which is to be floated in the liquid. This glass is graduated and marked at certain points with letters and figures. Thus, W., P., and F. The W. stands for "water," P. for "pure,"

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* As a general rule, the amount of fat may be increased by increasing the amount of meat in the diet, and the amount of albumin decreased by moderate exercise. Too little fat and too much casein make poor milk.—*Rotch*.

and F. for "fat." Between the W. and P., at different points, are the fractions, ¼, ½, ¾. Should the weighted glass sink in the liquid so that the surface of the liquid reached the mark W., the liquid tested would have the same specific gravity as water. Should the surface of the liquid reach the mark ¼, if it is milk that is tested, it would be ¼ milk and ¾ water. If the mark ½ is touched, it is ½ water and ½ milk. In this way the adulteration of the milk with water is detected. Should the level of the liquid stand at P., we would have pure milk. Pure cream would raise the weighted glass so that the level of the liquid would stand at F. An ordinary urinometer may be used to obtain the specific gravity of milk in a similar way. Dr. Louis Starr suggests a good way to discover the proportion of cream in any given sample of milk: A narrow piece of paper, four inches long, is divided in its upper half inch by cross-markings into twelve equal parts. This paper is then pasted on the beaker of the lactometer with the marked portion uppermost, the lower edge touching the bottom of the beaker. Enough milk is then poured in to come just to the top of the paper, and the whole set aside for twenty-four hours. The cream rises and appears as a yellow layer at the top. This layer should have the depth of

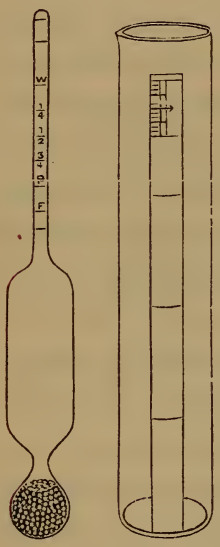

FIG. 31.—LACTOMETER.

ten or twelve spaces, as marked on the paper. There is an inexpensive instrument known as the *creamometer* which serves the same purpose in determining the amount of cream in milk.

On examination under the microscope, if there are but few oil globules in a specimen of milk, and if these oil globules be small, the milk is poor. On the other hand, if the oil globules in milk are too large, this becomes a cause for its indigestibility.

Should menstruation begin with a nursing mother, the milk may be so affected as to disagree with the child. Ordinarily, the menstrual flow does not recur until the *eighth month after delivery*. The appearance of the flow need not lead to a cessation of nursing, unless the milk should seem to disagree with the child. The character and quantity of the milk is impaired by deep or violent emotions; thus, anxiety, fear, anger, etc., will greatly detract from a woman's ability to be a good wet-nurse. *Pregnancy* always deteriorates the character of milk and is an indication for weaning a nursing child.

Hand Feeding.—When the mother's milk utterly fails and a wet-nurse can not be had, hand-feeding becomes necessary. For this purpose "modified cow's milk" may be used.

Cow's Milk has a specific gravity of 1.029. The milk obtained from stall-fed cows gives an acid reaction; that from pasture-fed cows a less acid reaction. Could the latter be obtained directly from the cow, its reaction would be slightly alkaline, as with human milk. An

analysis of the same quantity of woman's milk and cow's milk is reported as yielding the following results:

	Woman's Milk.	*Cow's Milk.*
Water,	87.88 parts	86.87 parts.
Total solids,	12.13 "	13.14 "
Fat,	4.00 "	4.00 "
Albuminoids,	1.00 "	4.00 "
Milk-sugar,	7.00 "	4.5 "
Ash,	0.2 "	0.7 "
Bacteria,	not present.	present.

The woman's milk for this analysis was obtained directly from the breast. The cow's milk was, as it is ordinarily obtained in cities, about twenty-four hours old.

By an examination of this analysis, it will be seen that the proportion of *coagulable substances* of cow's milk is much greater than in human milk. This is where the difficulty in its digestion lies. Casein of human milk coagulates in light curds; in cow's milk in firm, hard curds.

Quality of Food.—The kind of food required by different babies will vary with their constitutions. As a rule, a mother's milk is the best food for her child, and makes a good gauge to start from in the preparation of an artificial food to take its place or act as a supplement when there is an insufficient supply. If, therefore, a careful analysis is made of a mother's milk and a mixture prepared which shall, so far as possible, contain the

same constituents in the same proportion, we may hope that the baby will thrive on it. A steady *increase in the baby's weight* will be the best index by which we can judge of the nutritive qualities of the food it is taking.

Increase in Weight.—For the first four or five months of its life a child should gain on an average twenty to thirty grams (about one ounce) daily. For the remainder of the first year of life, a daily gain of from ten to fifteen grams will mark satisfactory progress.

In the comparatively few cases in which a mother's milk does not appear to have proper nutritive or digestive properties, it should be examined to discover in what direction the deficiency lies, and the artificial food should be prepared so as to supply the lack. The nutritive constituents of milk are the *albuminoids*, *fat*, and *milk-sugar*.

Modified Cows' Milk.—*Cow's milk* contains about *four times the quantity of albuminoids* found in human milk, so that it requires to be diluted with four times as much water to represent the same percentage of albuminoids. Since the amount of *fat in human and cows' milk is about equal*, this dilution would greatly decrease the percentage of fat. Also, since cow's milk contains a much smaller quantity of sugar of milk than is found in human milk, the same dilution would be greatly *deficient in sugar*.

In preparing a mixture from cow's milk, therefore, which may correctly represent human milk, fat, in the form of cream, and sugar of milk must be added.

Laboratories for the preparation of modified cow's milk according to the requirements of individual cases have been established in several of the large cities. Physicians are requested to send prescriptions giving the proportions of the different constituents of milk required for their patients, and from these the preparations are made, sterilized, and served daily to the patient. The prescription can be modified whenever required to meet conditions as they arise in the course of management.

Cream varies very much in richness; hence it is desirable to know what percentage of fat is represented by the cream used in compounding a mixture. A chemical analysis of the cream is necessary for accuracy of result in such determination. It has been suggested that to prevent too much variation in the percentage of fat, the cream should be obtained of the same person from milk that has been allowed to stand each day for the same length of time and in the same temperature.

Rotch's Formula for Modified Cow's Milk.—A mixture made up according to the following rule probably most nearly resembles the average human milk. To make one pint of the mixture for use in twenty-four hours, take milk and cream (twenty per cent.) as soon as it comes in the morning, and mix as follows:

Milk,	f℥ij
Cream,	f℥iij
Water,	f℥x
Milk sugar,	℥vi¾.

Put in a flask in the steamer and steam for twenty min-

utes; then remove the flask from the steamer, and when still slightly warm add lime water f℥j. Place on ice, and give the proper amount at the proper feeding time, warming the quantity of the mixture used in a water-bath before giving it to the baby.

The object in steaming the mixture is to sterilize it, for human milk is sterile, and for that reason more digestible than cows' milk—which, although sterile while in the udder, becomes contaminated as it is placed in vessels and transferred from place to place. It is believed by some that this steaming or boiling of milk has a tendency to decrease its digestibility. The danger from this source, however, is probably much less than that which would arise from the presence of germs in the milk, such as have been shown to exist. "*Fractional sterilization*," the heating of milk in a water-bath several times in succession up to a more moderate degree of heat than that required for complete sterilization (167° F.), is said not to have the same effect in decreasing the digestibility of milk.

Pasteurization of Milk.—The process which is known as *Pasteurization* (after the French scientist, Pasteur) is a modification of sterilization, the temperature of the milk being brought up only to 167° Fahrenheit instead of to 212°, which is done in sterilizing. It is claimed that this process destroys the germs sufficiently for all practical purposes. It does not, however, with certainty kill the germs, hence a method has been suggested by which the milk can be brought

to a higher degree of heat, and yet not lose its digestibility.

The bottles of the sterilizer are filled and the apparatus made ready in the usual way, but the hood is left off and the lid set ajar, while the heating is continued for forty-five minutes over a brisk fire. The temperature of the milk is thus brought up to about 190°. It has been found that milk thus prepared and kept in well-corked bottles will keep sweet for twenty-four hours.

Lime-water is added to make the mixture alkaline, all human milk being slightly alkaline. It should not be placed in the flask before boiling or steaming, because experimentation has shown that the lime undergoes some change in the process of boiling which causes a discoloration of the milk and the deposit of a sediment. Experiment has shown that water is the most efficient diluent to be employed in making these mixtures, as it gives a much finer curd with acids, when so used, than can be obtained by an admixture with barley-water or any of the prepared foods.

Having thus determined by analysis the *quality* of the food required for an infant, the *quantity* must be determined and also the frequency of feeding.

As to Quantity, the observations made by Dr. Ssnitkin, of St. Petersburg, have led to the formulation of a rule by which *one one-hundredth of the baby's weight* should be taken as the figure with which to begin the computation, and to this should be added one gram for each day of life.

A table prepared by Dr. Rotch, of Boston, has arranged in very convenient form the quantity and intervals of feeding for the first year of a child's life:—

GENERAL RULES FOR FEEDING.—(*Rotch.*)

Age.	Intervals of Feeding.	Number of Feedings in 24 Hours.	Average Amount at Each Feeding.	Average Amount in 24 Hours.
1st week.	2 hours.	10	1 ounce.	10 ounces.
1–6 weeks.	2½ hours.	8	1½–2 ounces.	12–16 ounces.
6–12 weeks and possibly to 6th month.	3 hours.	6	3–4 ounces.	18–24 ounces.
At 6 months.	3 hours.	6	6 ounces.	36 ounces.
At 10 months.	3 hours.	5	8 ounces.	40 ounces.

Another table arranged by Dr. Rotch shows the amount required at each feeding, according to the weight of the child.

DETERMINATION OF AMOUNT OF FOOD BY WEIGHT IN CASES OF SPECIAL DIFFICULTY.

Initial Weight.	Each Feeding.		
	early days.	at 15 days.	at 30 days.
3000 grams.	30 grams. (About 1 ounce.)	30+15=45 grams. (About 1½ ounces.)	30+30=60 grams. (About 2 ounces.)
4500 grams.	43 grams. (About 1½ ounces.)	45+15=60 grams. (About 2 ounces.)	45+30=75 grams. (About 2½ ounces.)
6000 grams.	60 grams. (About 2 ounces.)	60+15=75 grams. (About 2½ ounces.)	60+30=90 grams. (About 3 ounces.)

Stomach of Infant.—A new-born infant's stomach holds about 1½ ounces. The average daily quantity of food required for the first two to three months is 20 ounces; after three months, 23 ounces; after four months, 27 ounces; six to twelve months, 30 ounces. The child's appetite, however, if it be healthy, is a good gage. During the first month, 1½ ounces of the prepared cow's milk may be given at each feeding, and 12 feedings given daily.

Peptonized food, diluted, has been employed with great success by some physicians where the digestive powers in early childhood seemed at fault. The following formula may be used for the purpose:—

Into a clean quart bottle put one measure, or five grains, of extractum pancreatis (Fairchild's), and one measure, or fifteen grains, of bicarbonate of soda, and a gill of cold water; shake, then add a pint of fresh cold milk, and shake the mixture again. Place the bottle in water at about 110° or 115°, or just so hot that the whole hand can be held in it for a minute without discomfort. Keep the bottle there for twenty minutes. At the end of that time put the bottle on ice to check further digestion and to keep the milk from spoiling.

If heat cannot be conveniently provided, after the ingredients have been thoroughly mixed and shaken the bottle may be placed on ice and allowed to stand for an hour before it is used.

It must be remembered that *peptonized milk cannot be sterilized*, as it then becomes unfit for food—the process

of digestion being carried so far as to curdle the milk and render it extremely unpalatable. *Sterilized or Pasteurized milk may, however, after it has cooled, be peptonized.*

If an additional aid to the digestion should be necessary, a little pepsin may be given to the child just before each feeding, or the pepsin, or any of the powdered preparations used to aid digestion that may be prescribed by the physician may be placed in the nursing bottle just as the child takes it. Pancreatic extract and soda, if used, will need to be given about an hour after the meal.

Favorite Formulæ for Modified Milk.—A preparation of modified milk which has been much used by Dr. Broomall is the following, in amount for a single feeding:—

Cream,	1 teaspoonful
Milk,	3 teaspoonfuls
Lime-water,	2 teaspoonfuls
Boiled water,	10 teaspoonfuls
Milk sugar,	½ teaspoonful.

To make this up in quantity for sterilization the following proportions are required:—

Cream,	½ ounce
Milk,	1 ounce
Lime-water,	1 ounce
Water,	17½ ounces
Milk sugar,	6 ounces.

Another favorite formula in Philadelphia is that of Dr. Meigs, known as Meigs' Food:—

Cream,	2 parts
Milk,	1 part
Lime-water,	2 parts
Sugar water,	3 parts.

The sugar water is prepared by putting eighteen tablespoonfuls of milk sugar to a pint of water.

Dr. Louis Starr gives a very useful dietary for infants, which has also met with great success. Those formulæ which especially concern the obstetric nurse are as follows:—

Diet for first week:—

Cream,	2 teaspoonfuls
Whey,*	3 teaspoonfuls
Water (hot),	3 teaspoonfuls
Milk sugar,	¼ teaspoonful

for each portion; to be given every two hours, from 5 A. M. to 11 P. M., and in some cases once or twice at night, amounting to twelve fluid ounces of food per day.

Diet from the second to the sixth week:—

Milk,	1 tablespoonful
Cream,	2 teaspoonfuls
Milk sugar,	¼ teaspoonful
Water,	2 tablespoonfuls

for one portion, to be given every two hours, from 5 A. M. to 11 P. M., amounting to seventeen fluid ounces of food per day.

The proportion of milk in the mixture and the quantity given at one time are carefully increased during the succeeding weeks. Not until it is about nine months old can a baby well take undiluted cow's milk. When milk cannot be borne, diluted cream, one part to five or

* Whey is made by the use of rennet, or by adding three teaspoonfuls of wine of pepsin to a quart of warm, fresh milk, and placing the mixture near the fire for two hours. The curd is removed by straining through muslin.

six of water, or barley water, makes a serviceable mixture, or cream and whey may be combined thus:—

Cream,	1 ounce
Whey,	2 ounces
Warm water,	2 ounces
Milk sugar,	1 teaspoonful.

(*Griffith.*)

For those unable to follow any elaborate formulæ, the following plain directions for making cow's milk resemble human milk may be given:—

Simplified Formula for Modified Cow's Milk.— Take of "top milk" (the upper portion of good milk which has been allowed to stand in a suitable place six to eight hours) one part, and add to this two parts of water. This gives about the same proportion of cream and curd as in mothers' milk, but lacks sugar. Milk sugar (obtainable at any drug store) may be added to this in the proportion of one heaping teaspoonful to every four ounces of the mixture. If cane sugar is used, a teaspoonful should be added to every six ounces.*

The Temperature of the Food should be 99° Fahr. It is a great mistake to make it too hot. The warming of the child's food should be accomplished by setting the filled nursing bottle into a vessel of hot water. It may be heated quickly over a gas jet by setting the bottle into a tin mug filled with water and holding it over the flame. Suggestions concerning the modification of food, when milk thus prepared does not agree

* For Dr. Rotch's formula see page 190.

with infants, will be given in another chapter. When the mother's supply of milk is scanty and the baby cries with hunger, occasional meals of the above preparations will be a great aid in its management.

Sterilization of Milk.—By sterilizing milk is meant the process of destroying any poisonous matter which may have found its way into it. Exposure to the atmosphere and admixture with particles of dust and dirt during its transportation, with want of care as to cleanliness of vessels, etc., in which the milk is kept, induce certain fermentative changes, which cause it to sour and to produce digestive disturbances. Sterilization destroys the germ of poisonous matter by subjecting the milk to a high degree of heat under pressure. Many forms of apparatus have been devised for this purpose. The accompanying cut represents one form. That shown in the cut consists of an oblong case of tin fitted with a tight cover. Into this a movable wire basket, holding ten bottles, is placed. The bottles are of flint glass, graduated, and fitted with rubber corks having a glass plug fitted into an opening in their centers. The rules for using the sterilizing apparatus are as follows:—

1st. Cleanse the bottles thoroughly.

2d. Fill each with the milk you wish to use, put in the rubber cork without the glass plug (this leaves a small opening in the rubber cork); set the bottle in the basket, then in the boiler; fill the boiler with water almost as high as the milk in the bottle; boil about ten minutes, or, better, as Dr. Starr expresses it, "until the

expansion that precedes boiling has taken place in the milk;" then put the glass plugs tightly in each stopper and boil for fifteen or twenty minutes more. Should the rubber corks incline to come out during the second boiling, put them in firmly.

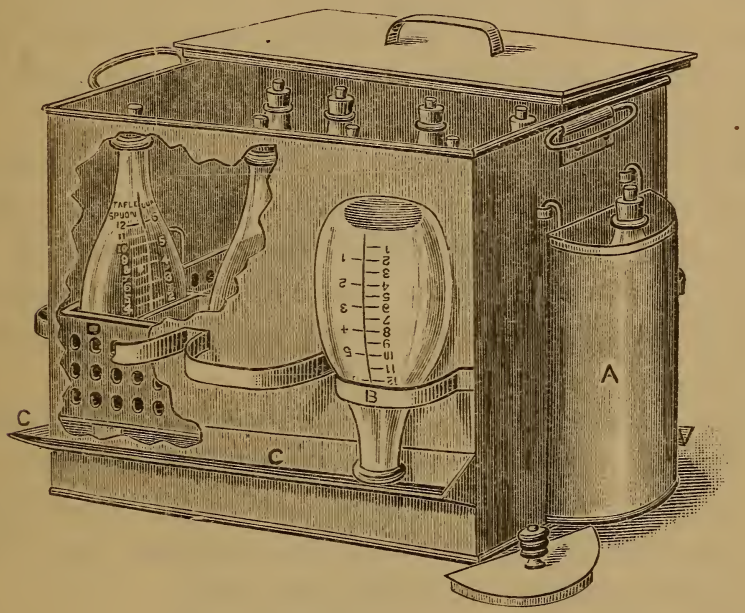

FIG. 32.—STERILIZER.—(*Dr. Louis Starr.*)*

3d. Keep in a cool place till needed for use.

4th. When to be used, place a bottle of the milk thus prepared in the tin mug which accompanies the apparatus. Pour hot water in the mug until it is as high as the milk in the bottle. Heat the milk to the temperature

* "Hygiene of the Nursery."

desired for feeding (99° Fahr.); remove the rubber cork and put on rubber nipple, and feed.

5th. Cleanse each bottle immediately after the milk in it is used. Do not keep milk in a bottle that has had some used out of it.

6th. If the steaming process is preferred, place the basket, without the bottles, in the boiler, fill with water up to but not above the bottom of the basket, place the bottles in the basket, and proceed as before.

Milk should be sterilized or Pasteurized as soon as possible after it has been served each morning. Each bottle, when emptied, should be thoroughly washed. If the whole contents of the bottle are not used after it is opened, the remainder must not be used for the child nor allowed to remain in the bottle.

Milk sterilized in this way will keep for days without spoiling, as it is hermetically sealed and has been deprived of all unhealthy germs. Dr. Louis Starr makes the assertion that it will keep for eighteen days if the heating is continued for thirty minutes.

Sterilized milk is useful when traveling, as it may be carried without any trouble, the difficulty of obtaining fresh milk being thus overcome. Its use makes the management of babies during the heat of summer much easier.

A word remains to be said concerning feeding-bottles and rubber nipples.

The Nursing Bottle should be of clear glass, with a rounded bottom, of a shape convenient to clean, so that

no particles may cling about corners which cannot be reached, serving as a source of trouble afterward. The graduated bottle is very convenient, as it enables the quantity of each of the materials used in the preparation

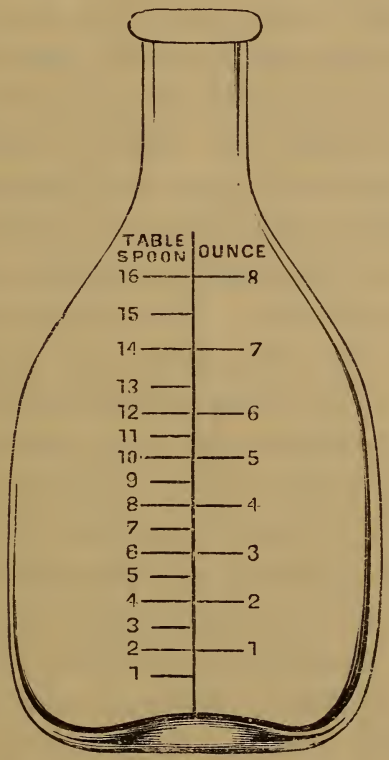

FIG. 33.—GRADUATED NURSING BOTTLE.—(*Dr. Louis Starr.*)

of the feeding to be mixed directly in the bottle, instead of being first measured out in a graduate.

Feeding-bottles with India-rubber tubes are very objectionable, for the tubes are difficult to keep clean, and

a drop or two of milk left behind will often be sufficient to turn the next supply sour, causing the infant much sickness and suffering. Nurses are prone, also, with these tubes, to place the baby in its crib with the bottle of milk by its side and the nipple in its mouth. The heat of the child's body tends to sour the milk, the liquid may run low, and the child suck in considerable air. The neck of the bottle should always be kept filled with the liquid while the child is nursing, hence the position of the bottle must be changed. A feeding-bottle fitted with a rubber nipple requires to be held in the nurse's hand during the feeding, and is, on that account, to be preferred. There should always be two nursing bottles for each baby, one being kept under water or filled with a soda solution while the other is in use. Immediately after the meal the bottle should be cleaned, etc. Scalding water should be used, and then the bottle filled or placed beneath a solution of bicarbonate of sodium—ordinary baking soda—a teaspoonful to the pint, until it is again needed, when the soda solution should be emptied out and the bottle thoroughly rinsed with cold water. Some use salicylate of sodium for the cleansing solution in preference to the bicarbonate.

Rubber Nipples.—Two nipples should be in use at the same time, being used alternately, and no nipple should be used longer than two weeks. A soft rubber nipple of conical shape is the best, because it can be more readily cleaned. The black rubber is generally

softer than the white, and is to be preferred. The opening at the top of the nipple should not be too large, as that would permit the milk to flow through, whereas the suction produced by the child's mouth is necessary to the food being taken in a natural manner. So soon as the meal is over, the nipple should be removed from the bottle, brushed with a stiff brush, wet with cold water on the outside, then turned inside out and similarly brushed on its inner surface. It should then be put in cold water and allowed to stand until wanted. A nurse's sense of smell should be keen enough to enable her to detect the slightest sourness about a bottle or nipple.

FIG. 34.—RUBBER NIPPLE.—(*Starr.*)

The baby should be *fed slowly*—taking often ten to twenty minutes for its meal. Sucking from an empty bottle should never be permitted.

It is a bad plan to make the whole day's supply of food in the morning, unless the facilities for keeping it are such as to insure against its spoiling. When a sterilized preparation is used, it is desirable to have the whole amount prepared at once in a number of small flasks, each containing the amount for one feeding.

The *sterilization* of the quantity of milk to be used during the day may all, however, be accomplished at one time.

Home-made Sterilizer.—In lieu of the regular sterilizing apparatus, milk may be similarly boiled in a

water-bath formed by any ordinary boiler, the milk being contained in a glass fruit-jar with a screw lid. After coming to the boiling-point, or boiling about two minutes without the lid, the latter may be screwed on and the boiling continued. A better way is to put the jar in a colander placed over a steaming tea-kettle in place of the lid. The milk should be allowed to boil in the open jar for about two minutes ; the jar lid then being screwed down, it should steam for twenty minutes.

Fresh Air.—Besides good food and sufficient warmth, babies need an abundant supply of fresh air, hence the room should be kept pure and wholesome.

In fine weather, after the first three or four weeks, a baby should be carried out in the open air every day for a time.

It is preferable to carry the child in the arms, rather than to place it in a baby-coach. It can thus be kept warmer, and any evidence of chilling will be sooner detected by the appearance of the baby's face. When it is not practicable to take the child out, the baby warmly wrapped may be carried about in a room, the windows of which have been raised, and free ventilation obtained.

CHAPTER XIII.

CHARACTERISTICS OF INFANCY IN HEALTH AND DISEASE.

A healthy baby, if born at full term, should weigh 3250 grams, or about seven pounds. Its length should be, on an average, 50 cm., or twenty inches.

Development.—The *head and trunk* of the child are developed out of proportion to the *limbs*, so that the navel is below the middle of the child's body. This greater development of the upper part of the body is due to the fact that in the womb this portion of the child's body receives the greater amount of nourishment. The subsequent growth consists largely in the development of the lower limbs.

The *skin* of a new-born baby varies in color from a pink to a decided red. The redness is more marked in premature babies. From the third to the fourth day this redness disappears, and the peculiar yellowish tinge, known as "baby jaundice," appears, as a result of the changes in the circulation. This is not true jaundice. This yellowish tinge of the skin should disappear by the end of the second week. At the same time that the skin begins to change color, from the third to the

fourth day, it begins to scale or peel off. This is most noticeable about the fifth day, and lasts about sixteen days.

The baby's limbs should be plump and well-rounded. The abdomen is prominent, as compared with the chest.

The *shape of the head* varies very much. At times it is perfectly rounded, again it will be elongated and oval-shaped.

Pressure during labor, either from the walls of the pelvis or as a result of the use of instruments, will cause at times considerable temporary distortion in the shape of the head. To allay swelling and prevent discoloration induced by bruising, fomentations may be used, either of simple hot water, or hot water containing a little fluid extract of hamamelis. Sometimes it is better to use cold applications, if the child is not too feeble.

When there has been a good deal of pressure on the baby's head during the birth, the bones will sometimes override each other, and this will be shown by elevations or ridges upon the baby's head, which soon disappear when the head is no longer subjected to pressure. These ridges, which are converted into soft grooves on the removal of pressure, indicate the separation between the different bones of the head, and are called "sutures." The larger soft places are called "fontanelles." The largest is on top of the head just above the forehead. It is called the "anterior fontanelle," commonly known as "the opening of the head." It is about large enough for the tips of two fingers to cover, when of normal

size, and is kite-shaped. A much smaller three-cornered fontanelle is found at the back of the head, and two behind the ears. These very soon fill up with bone.

The large anterior opening does not close entirely until a child is about eighteen months of age. Should it remain open longer, it is a sign of constitutional weakness. In a healthy baby the surface of this fontanelle should be on a level with the surrounding bones of the skull. A slight pulsation may be noticed in it, due to the pulsation of the blood-vessels in the brain. Should the fontanelle be much depressed at any time, it would indicate a low state of vitality. Care should be taken not to permit any undue pressure on this part of the baby's head, as the brain here lies very near the surface.

The fashion some old monthly nurses have of trying to shape the head by the pressure of the hands is dangerous, as the brain may be thus injured. As the head bones are soft, the child should not be allowed to lie too continuously on either side or on the back, as this will cause flattening of the part pressed upon.

The first *hair* of the new-born baby, if it has any, is apt to fall out. The *eyes* of all new-born babies are of rather an indefinite color—a sort of blue. A change generally occurs when the child is about two months old. At this time also *vision* is nearly perfect. A new-born baby probably cannot do more than distinguish light from darkness. *Hearing* and the *sense of smell* develop rapidly in a child. Loud noises waken it as early as

during the first week. By three months of age the child shows that it has a *mind* and is capable of exercising thought. It grasps after objects and indicates by its expression and gestures its likes and dislikes. By the age of eight or ten months it *utters several syllables*, and at the age of a year should be able to say "papa" and "mamma." By two years of age short sentences can be used.

Weight of Baby.—For the first two days of a baby's life it loses weight, but by the third day it begins to gain, and by the end of the first week it should weigh what it did at birth. The average daily gain is 30 grams, about 1 oz. The following facts concerning the early changes in weight are obtained from Gregory:—

An infant born at full term weighs from 6 to 7 pounds, 7 pounds being an average weight. For the first two or three days of life there is a loss of 4 ounces to 7 ounces, then a regular gain, so that by the eighth to the ninth day the initial loss has been made good. The following figures express the average daily loss and gain during the first six days of life:—

First day, ...	Loss of	139	grams, or nearly	5	ounces.
Second day, ...	"	64	" "	2¼	ounces.
Third day, ...	Gain of	33	" about	1	ounce.
Fourth day, ...	"	50	" "	1¾	ounces.
Fifth day, ...	"	50	" "	1¾	ounces.
Sixth day, ...	"	36	" "	1¼	ounces.

The child's weight should be doubled in the fifth month, and trebled in the twelfth month. The baby

should be able to hold up its head in the sixteenth week, at the same time sitting up. It should stand by the thirty-eighth week. It should "take notice" and be able to grasp things by the third to the fourth month.

It is important that a nurse should know the above facts as to the child's development, to be able to report satisfactorily concerning its condition to the physician in attendance.

Sleep.—A large proportion of the time of early infancy is spent in sleep. The more premature the baby, the more constantly does it sleep. During sleep the eyelids should be tightly closed. A partial separation of the lids, showing the whites of the eyes, is an indication either of some disease, or of pain, from whatever cause.

The Respirations of a healthy baby when awake may be very irregular, some inspirations being shallow and others deep—at times hurried, and again slow. The only time when the respirations can be satisfactorily counted is when the child is asleep, for then the breathing is more regular. The rise and fall of the abdomen may then be noted (for the breathing of an infant is abdominal). The number of respirations in a minute average 44. So quiet is the healthy breathing of early infancy that there is no motion of the nostrils or of the lips, or even of the chest, to indicate the incoming and outgoing of air. Fever, colic, and lung trouble will greatly increase the number of respirations in a minute, making them mount up to 60 or 80, or even higher.

Nervous excitement has a similar effect, though this is temporary.

In brain trouble a slowing of the respirations occurs, so that they may get down to eight in a minute. When the act of breathing is painful, a moan or cry accompanies each act of respiration. The expansion of the nostrils with each inspiration indicates a want of sufficient air space in the lungs. In connection with any lung trouble a *bluish coloration* of the lips and face generally is a bad symptom, as it indicates that sufficient air does not enter the lungs to purify the blood.

The Pulse.—Little reliance is to be placed upon the pulse of a baby as indicative of disease, for it is characteristic of the infantile pulse that it is very rapid, very easily affected by external or internal causes, and notably irregular. The average pulse of the new-born baby is 140. If a baby is well-nourished, it is too fat to enable the pulse in the radial artery to be counted. Hence the pulse is more easily obtained in the temple or at the ankle. If not thus readily obtained, the heart-beats may be counted by holding the hand over the baby's heart.

The Temperature of a child at this age is also subject to rapid changes, the result of slight causes. The average temperature is 99° Fahr., but a cold or an attack of indigestion may cause a sudden increase, with as sudden a return to normal when the cause is removed.

A *subnormal temperature* is an indication of lowered vitality, the result of some drain upon the system, as of

an exhaustive diarrhea, or of some constitutional weakness. This fall of temperature is a dangerous symptom in infants. The tip of the nose and the extremities of the child, if cold, also indicate a condition of low vitality, and require that the child should receive very especial care from the nurse as to the supply of food and warmth. In fever the back of a child's head feels very hot, as also do the palms of the hands.

The Cries of a Child form a special language by which its needs may be made known. Every nurse should learn to distinguish the peculiarity in the different kinds of cries, so as to meet the varying demands thus indicated. A healthy, well-trained baby rarely cries, unless *hungry*, when the cry will be constant and very persistent until the want is satisfied; the upper part of the body is moved at the same time, especially the arms and head. The cry induced by *ear-ache* is also unappeasable, and generally accompanied by a drawing of the hand up to the head. A similar gesture accompanies the cry induced by *brain trouble*, which is a shrill scream, often waking the child during sleep.

A *cry accompanying a cough* is an indication of pain in the chest. The paroxysmal character of *colic* is indicated by the characteristic cry which accompanies it,—a sharp, sudden cry,—the limbs at the same time being drawn up toward the abdomen. An evacuation of the bowels may precede or follow the cry.

Sore Mouth.—If, in nursing, a baby seizes the nipple by the mouth and drops it suddenly with a cry, doing

this repeatedly, there is in all probability some soreness of the mouth, which should be discovered and treated. However heartrending the cry, the baby does not secrete tears in sufficient quantity to run down the cheeks until the third month of infancy. Hence the common saying, that a baby cannot suffer pain because it sheds no tears while crying is not supported by fact.

Facial Expression.—A wrinkling of the forehead vertically, produced by drawing the eyebrows together, indicates pain about the head. A sharpening or play of the nostrils exists in lung troubles. A drawn look about the mouth is found with digestive troubles, as flatulent colic.

The Stools of a very young baby fed on breast milk should be of a yellow or orange color. Three or four evacuations a day are natural. They should contain no curds. Stools of bottle-fed babies are lighter and more offensive.

Urination.—The number of times a new-born baby urinates will vary much with the weather and the conditions under which the child is placed. It is not unusual in cold weather for the napkin to need changing almost every hour. Healthy urine should not stain the napkin.

Mothers and nurses are often much troubled by the failure of an infant to pass urine or feces for the first few hours or days of its life. A careful examination of the anus or external opening of the bowel will soon show whether there is any imperforate condition of the rectum which may cause the retention of feces. Closure

of the urethra is so rare that retention of urine is very seldom seen.

The new-born infant secretes but very little urine until it begins to take nourishment freely. The bladder is usually emptied during the process of birth, which is very frequently the case with the bowels, so that if the child seems well and there is no malformation of the parts, the family may be assured that the condition is only temporary.

The use of fomentations over the kidneys and bladder will frequently hasten the evacuation of urine if it be unduly delayed. If the secretion seems highly concentrated, as is shown by the brickdust deposit sometimes found on the baby's diaper, a drop of sweet spirits of niter in a teaspoonful of water may be given once in two hours.

Should the child seem to suffer pain from the retention of the contents of the bowel, an ounce of warm water or olive oil injected into the rectum will usually produce a satisfactory evacuation. Should a laxative by the mouth be needed, the physician must be consulted. A teaspoonful of sweet oil often serves the purpose very nicely, or a few grains of manna dissolved in milk.

The Teeth sometimes appear prematurely. A child may be born with one or more teeth already cut. These are usually imperfect, and fall out in a short time, to be replaced by the milk-teeth. The latter are twenty in number, and are usually cut in groups, starting about the

fourth month and continuing till between the twentieth and thirtieth months, when the first dentition should be complete. There is an interval of rest as a rule between the eruption of each group. Girls are more apt to cut their teeth early than boys, and, as an early dentition is usually an easy one, it is fortunate for the child to have it occur early.

Even under normal conditions the edges of the gums in teething become swollen, rounded, and reddened as the teeth come near the surface. The saliva is at the same time increased in quantity, and the mouth is heated and uncomfortable, so that the child desires constantly to bite upon any object that may be at hand. A healthy child should not suffer in any way from the process of dentition, and when the point of the tooth comes through the gum the local symptoms may vanish.

The following diagram will illustrate the order in which the teeth are cut. The numbers 1 to 5 show to how many groups the several teeth belong and the order in which the groups appear. The letters *a* and *b* show the order in which the teeth in each group appear.

Bottle-fed babies are more apt to be late cutting their teeth than those that are breast-fed. If no teeth have appeared when the child is a year old, we may know that the child's general nutrition is at fault, or it may have the disease known as rickets.

Bottle-fed babies are also apt to have their teeth come through the gum in irregular order. This frequently is

an indication of lack of health, although sometimes it is a family peculiarity.

The first set of teeth which the child has is called the temporary set. It consists of twenty teeth, known as milk teeth. The permanent set, of which the first appear

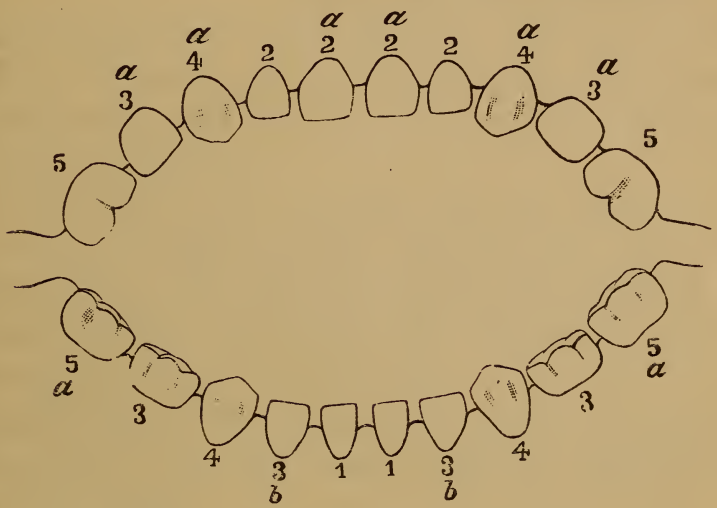

FIG. 35.—DIAGRAM SHOWING ERUPTION OF MILK TEETH.*

1, 1. Between the fourth and seventh months. Pause of three to nine weeks. 2, 2, 2, 2. Between the eighth and tenth months. Pause of six to twelve weeks. 3, 3, 3, 3, 3, 3. Between the twelfth and fifteenth months. Pause until the eighteenth month. 4, 4, 4, 4. Between the eighteenth and twenty-fourth months. Pause of two to three months. 5, 5, 5, 5. Between the twentieth and thirtieth months.

at about six years of age, consists of thirty-two teeth. They push upward in the jaw and loosen the first set, gradually displacing them.

Walking.—Many children creep before they walk,

* From Starr, "Diseases of the Digestive Organs in Infancy and Childhood."

and in that case may prefer this means of locomotion to walking. A child usually creeps as early as seven or eight months. At about ten months the child may walk by holding on to things. Strong children may walk alone at one year of age. With weaker children this may be delayed until two years.

CHAPTER XIV.

THE AILMENTS OF EARLY INFANCY.

It is not proposed in this chapter to take up all the ailments of infancy, for the term *infancy* comprises a time beginning with the birth of the child and lasting until the first dentition.

The obstetric nurse remains with the patient from four to six or eight weeks. During this time many deviations from the normal, healthy state may be met with in the child, and these she should be quick to observe and know how to manage.

Prematurity.—One of the most important conditions of this period is "prematurity," a result of the too early birth of the child.

A premature birth is one that occurs at any time after the child is "viable"—that is, capable of living after its birth. The term of *viability* has been set at twenty-eight weeks, or seven lunar months. Deliveries occurring previous to this time are called "miscarriages."

It may be that, with improved methods of management, the period of viability may be placed at an earlier date, but this is as yet a matter for proof.*

* The French claim that by means of gavage and the couveuse, or hatching-cradle, the actual period of viability has approached six months of intrauterine life.

It has generally been conceded that a child born at six lunar months cannot live, that at seven months it stands little chance, that at eight months its chances are better, and at nine still better.

The popular notion that an eight-month baby (counting the calendar months) does not stand so good a chance of living as a seven-month baby is altogether wrong. Great care is needed for premature babies.

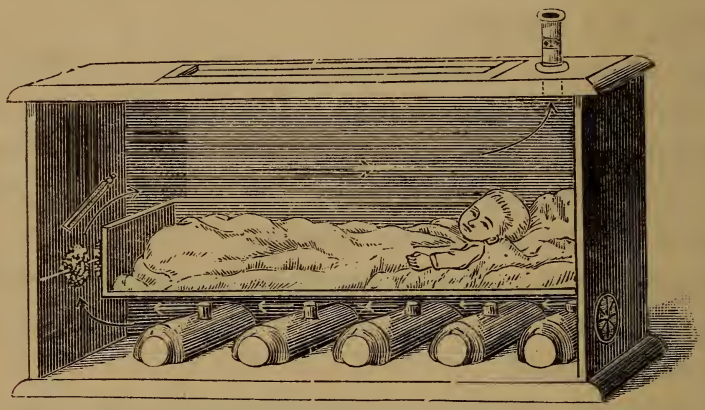

FIG. 36.—TARNIER'S COUVEUSE.*

They especially need regular feeding and to be kept very warm. The skin, being thin and delicate, will also require very careful attention.

Until within a few years the matter of keeping the

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* Dimensions of couveuse for a single infant: Width, 36 cm.; length, 65 cm.; height, 55 cm. For twins a larger case is necessary. The temperature within the incubator should be kept at from 85° to 95° Fahr., as determined by a thermometer laid in upper compartment.

baby sufficiently warm was exceedingly difficult to manage. The French invention of the "couveuse," or "brooder," has simplified the matter very much. The first incubator for the rearing of premature infants was made in 1857, at Bordeaux. It was crude in construc-

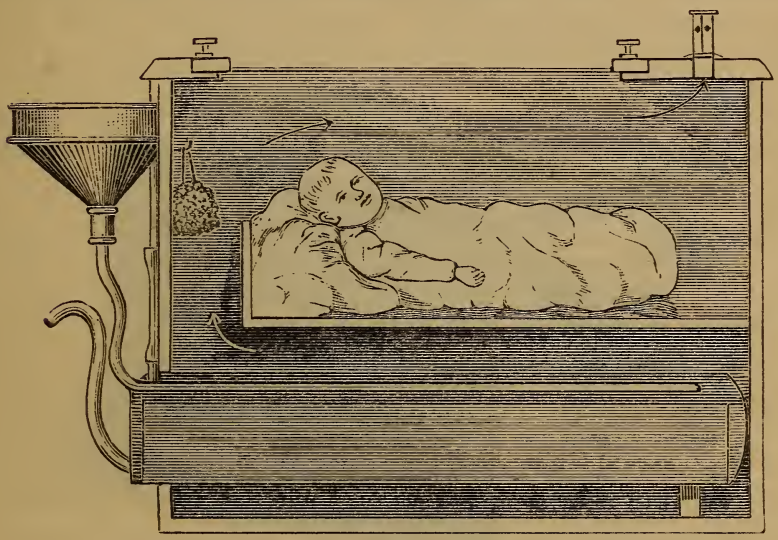

FIG. 37.—AUVARD'S COUVEUSE (INTERIOR VIEW).*

tion as compared with more modern inventions, but yielded very satisfactory results. In 1880 Professor Tarnier, of Paris, constructed an apparatus, consisting of

* In Auvard's couveuse a cylindrical reservoir of metal takes the place of the hot-water jars in lower compartment of Tarnier's couveuse. This is filled by means of a metallic funnel fastened to one end of the box and communicating with the cylinder. An overflow pipe carries off the excess of water upon the addition of more hot water as required.—"*Archives de Tocologie.*"

a box with an upper and a lower chamber, which communicated with each other, and which was heated by stone jars filled with hot water in the lower chamber, the upper serving as the bed for the child. Suitable means for regulating the degree of heat were provided by ventilators, etc. Dr. Auvard later improved this incubator

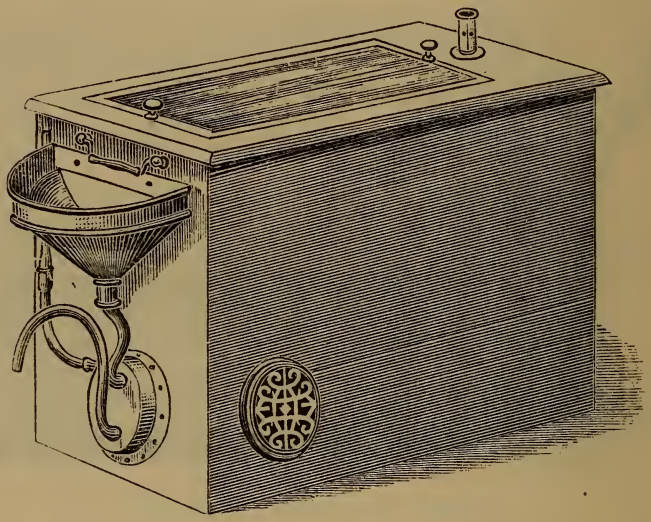

FIG. 38.—AUVARD'S COUVEUSE (EXTERIOR VIEW).

and presented it to the Maternity Hospital at Paris, where it served to prove most successfully that artificial means could be employed for increasing the chances of life with premature infants.* In 1891 M. Lion, of Nice,

* Crédé's incubator is a copper vessel with double walls, between which water at the desired temperature may be kept, and withdrawn by means of pipes and stop-cocks.

improved upon any of the forms of apparatus earlier devised, and achieved the most wonderful results by his invention, which is now much used.

The Lion Incubator.—"The Lion incubator is composed entirely of metal and stands upon iron supports. It can be disinfected without deterioration by means of a steam stove under pressure. Ventilation is obtained by means of a tube of about three inches in diameter, with a chimney of the same size. A screw placed on the top indicates by its rotation the strength of the current of air. The front of the incubator is fitted with a glass window, through which the child may be seen, while on the left is another glass window, which enables the mother or nurse to attend to the wants of the infant, and, if necessary, to remove it. The baby is laid in a metallic hammock placed in the center of the incubator, thus enabling the warm air to circulate freely about it. A thermometer placed at the level of the infant's head regulates the working of the apparatus. The heating is effected by means of a siphon, through which the hot water circulates, and which communicates with a reservoir at its side. A special system of pipes allows the air to pass directly from the interior into the apparatus. In these pipes the air is filtered before it enters the incubator. The temperature is automatically regulated, and the current of heat is increased or diminished as required, and without variation."*

* From Catalogue of Lion Institute, Paris.

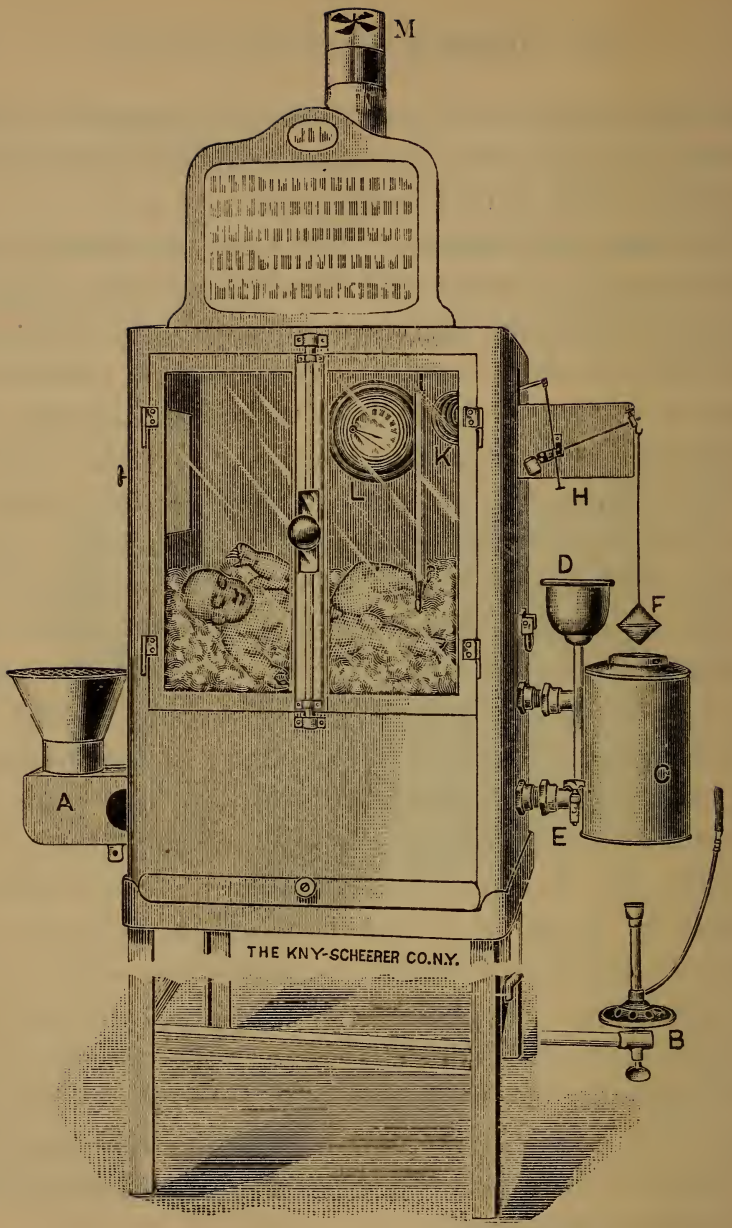

FIG. 39.—INCUBATOR FOR PREMATURE-BORN CHILDREN.*—(*Kny-Scheerer Co., New York.*)

* The apparatus is constructed of steel, with glass doors and one glass window on the side for feeding purposes, etc. The heat generated in C

Modifications of the Lion incubator are made in this country. The accompanying cut shows the one in use at the Maternity connected with the Woman's Hospital.

The child should be placed in the upper compartment of the couveuse as in its cradle, being removed simply for nursing, its bath, and toilette. If artificially fed, it can be managed through the side window, without removal from the incubator. When removed from the couveuse, care should be taken to have the temperature of the room sufficiently warm. It should be as nearly as possible the same as the temperature within the couveuse—between 87° and 90° Fahr.

Auvard recommends the use of the couveuse in all cases where the vitality of the child is enfeebled either by external causes, as cold, or internal causes, as prema-

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communicates itself to the water-filled tubes on the inside, maintaining a uniform temperature at any desired point by means of a spiral thermo-regulator inside, K, which is controlled by micrometer adjustment from outside, H and F. The hygrometer, L, records the atmospheric conditions of the chamber. The air supplied to the infant is filtered through an absorbent cotton filter in box A; this air can be taken from the room in which the apparatus is placed or directly from the outside by means of simple tubes. The revolving wheel, M, in chimney indicates the perfect circulation of air. The cup D is a feeding reservoir for the supply of water circulating in the pipes, and communicates with the siphon at the point E. When the apparatus is in active use the cup will need filling about once in three hours. The gas-burner B is connected with a gas pipe in the apartment in which the apparatus stands, either by rubber-tubing or, preferably, by close metallic connection. A thermometer is fastened to one side of the upper compartment of the apparatus. A frame for a chart containing records of the condition of the child is found on the top of the apparatus.

turity, congenital feebleness, cyanosis, or "blue disease," wasting, or other general maladies enfeebling to the newborn.

Swaddling.—Before the couveuse was known, premature babies were *swaddled* in cotton, in order to be kept sufficiently warm. The directions for doing this are as follows:—

Take a square baby-blanket and place it diagonally on the table or bed. Turn down one corner for four inches' distance, to come up over the baby's head.

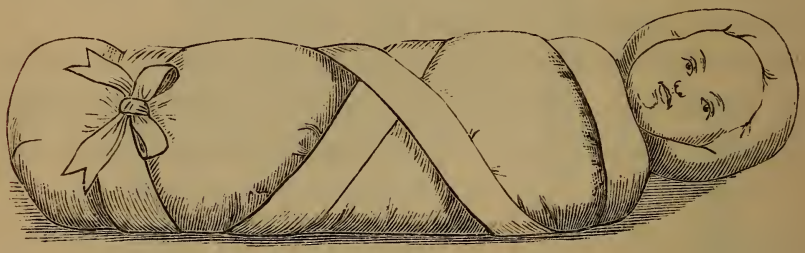

FIG. 40.—SWADDLED BABY.

Spread over this blanket a lap of raw cotton. Have the baby's napkin and binder on, and a flannel undervest. Make a cap out of the cotton, fitting it over the baby's head and bringing it down well under the chin. Then roll the baby up in the cotton lap. Bring the blanket around this firmly, so as to hold it; the portion of the blanket on the baby's right being brought over and tucked in on the left side, the portion on the left being correspondingly folded over toward the right. The corner of the blanket left at the feet is then folded up

over the front, and the whole held in place by means of a strip of muslin bandage or ribbon. The bandage is first applied beneath the chin, crossed under the back, and again crossed in front, the ends being brought forward to fasten in a bow-knot at the feet.

The great disadvantages of this method may be seen in the restriction it gives to the movements of the child's limbs, and the difficulty of determining when the child's napkin needs changing, also the frequent exposure of the child during these changes to the ordinary atmosphere.

Home-made Incubator.—An ingenious method of maintaining the body-heat of a baby, and one readily accomplished in any household, is described as follows by Dr. Reynolds:—

"A large basket should be thickly lined with heated blankets or other flannels. A number of bottles, filled with very hot water, should be so arranged around the sides of the receptacle that they can be removed and reinserted without disturbance of the infant. The child is wholly covered, with the exception of its face, with well-warmed cotton batting, and is laid between the bottles; and the cradle is then covered with a thick blanket, a space at the end which corresponds to the child's head being left open to permit the entrance of air. A thermometer should be laid beside the child, and one or more of the bottles should be refilled with hot water whenever the temperature is seen to fall below 87° F. The water should not, on the other hand, be so hot as to raise the temperature of the contained air much above 90° F."

Stimulation.—If the baby be very weak, it may be necessary to stimulate it for two or three days by giving it a drop or two of brandy, with or without a drop of aromatic spirit of ammonia, in a teaspoonful of warm water once in two hours.

Period of Incubation.—The length of time a premature baby should be kept in its close quarters is dependent upon the progress it makes, or *until the gain in weight and strength brings it up, as nearly as possible, to the standard of a baby at full term.* A seven-months' child, if strong enough, may be dressed and allowed to nurse when it is four weeks old. Great care, however, must continue to be exercised until the child reaches full term. It should not be removed permanently until it has acquired sufficient vigor to live in the ordinary atmosphere of the apartment. To accustom the child to this atmosphere, it should, as it grows stronger, be removed for an hour at a time from the couveuse during the warmest part of the day.

It is best to continue the use of the apparatus at night for some time after the child becomes accustomed by day to removal from the couveuse, for the danger of chilling from changes in the atmosphere is greater at night.

The *skin* of a premature baby should be well greased after every bath, or some oil, as cotton or sweet oil, may be used, and will serve the double purpose of protecting the skin and giving nourishment by absorption.

The child should be *fed* every hour. As it is usually too weak to suck, it is safer to feed the baby with a

spoon or with a dropper, to make sure of its obtaining a sufficient amount of food. From one to two teaspoonfuls should be given every hour. Breast milk is, of course, the best. It may be drawn from the mother's breast and fed to the child while warm. The nurse should introduce her little finger into the child's mouth and allow the milk to trickle slowly down the finger, so as to enter the mouth drop by drop, while the child sucks the finger. Should the mother have no milk, the first week's feeding recommended by Dr. Starr, or sterilized peptonized milk, diluted two-thirds with boiled and filtered water, may be used—if no wet-nurse can be had as a substitute.

Gavage.—Should the baby drink badly and throw up a large proportion of the liquid given to it, "gavage" may have to be resorted to. The physician must authorize the nurse to carry this out, for she should never undertake it otherwise. The directions for practicing gavage, as given by Dr. Louis Starr, are as follows:—

The apparatus used is quite simple, being nothing more than a urethral catheter of red rubber (Nos. 14–16, French), at the open end of which a small glass funnel is adjusted. The infant upon whom gavage is to be practised is placed on the operator's knee, with its head slightly raised; the catheter, being wet, is introduced as far as the base of the tongue, whence, by the instinctive efforts at swallowing, it is carried as far down as the esophagus (or gullet) and into the stomach.

The liquid food is next poured into the funnel, and by

its weight soon finds its way into the stomach. After a few seconds the catheter must be removed, and here is the great point in the operation; it must be removed with a rapid motion and at once, for if it be withdrawn slowly all the food introduced will be vomited.

Mothers' milk is the best for gavage, as at any time, but other kinds of food may be used. The amount given and the number of meals will vary with the age and strength of the child. From a teaspoonful to a dessert-spoonful at one time is sufficient for a very young child, given every hour. Too much food would produce indigestion. As the child grows stronger this mode of feeding may be made to alternate with nursing. Modified cow's milk may be used for the alternate feedings.

Colic is a very troublesome affection of infancy. It corresponds to the dyspepsia of grown people, and indicates that the food is either improper in quality or quantity. A colicky cry is a sudden, sharp cry, the baby drawing up its feet and legs at the same time. The feet are generally cold, and one indication for treatment is to warm them; warm socks or woolen stockings should be worn, or hot bottles applied to the feet.

The abdomen should also be kept warm by the application of *heated flannels*, or a spice poultice, wrung out in hot whiskey, or a flaxseed poultice, which should be kept applied until the baby gets relief.

To make a *spice plaster*, a teaspoonful each of ground allspice, cloves, cinnamon, ginger, and cayenne pepper, with four teaspoonfuls of flaxseed meal, may be quilted

into a bag of flannel, 4 x 8 inches, which will fit entirely over the baby's abdomen. When the spicy smell is lost the plaster is no longer good for use.

Warm oil rubbed gently in over the abdomen for ten to fifteen minutes at a time will often give relief by leading to the expulsion of the wind causing the pain.

If the application of heat is not sufficient, *anise-seed tea* should be given. It is made as follows:—

Over a half-teaspoonful of anise-seed pour a half-teacupful of boiling water. Allow it to steep a few minutes, until the water tastes strongly of the anise-seed. A half-teaspoonful of this may be given warm every ten minutes until the baby has had four doses. This brings up wind from the stomach, and thus gives relief. Simple hot water will help in the same way should anise-seed not be on hand. Catnip tea may be made and used according to the same directions. These teas are preferred to the drop doses of gin so frequently given.

Bowel Movements.—Frequent stools do not always indicate diarrhea. For the first six weeks of its life a child averages three or four movements every twenty-four hours, after which it has about two a day until it is two years old.

A natural passage for an infant would be of a mushy consistency and a yellow or orange color. It should contain no curds. Bottle-fed babies have whiter and more offensive stools than breast-fed babies.

Diarrhea.—In diarrhea there is a change in consist-

ence or appearance. A liquid stool, or one colored green or white or like putty, would be abnormal. The presence of curds also would show an inability to digest the food properly. The diarrheas of infancy, though oftenest due to improper food, may be caused by exposure to heat, or may result from taking cold. Bottle-fed babies suffer much with diarrhea in summer time, indigestion and heat acting together to produce the disease. Often little can be accomplished without entire change of air. A trip to the seashore or the mountains has saved many a baby's life.

In *simple diarrhea* there is little, sometimes no, fever. There may or may not be vomiting. In *cholera infantum* the stools are very numerous, the discharges being the color of rice-water. There is constant vomiting, high fever, intense thirst, great coldness of the surface, and often sudden collapse.

In *inflammation of the bowels* the movements are smaller and have some color. The fever is more moderate and the vomiting is less.

In *dysentery* the passages are frequent, small, and contain more mucus. There is much straining and often quite a large amount of blood passed. The emaciation of infants suffering from these diseases is very rapid.

The careful regulation of the baby's diet is the most important consideration in *treatment.* At first all food must be stopped for five or six hours. A little barley-water or egg-albumen water, or some simple meat juice may be used if the baby seems hungry. Cold water

also may be given. If the baby's skin feels hot, it may be bathed or sponged with cool water frequently. If the surface is cold, a tepid mustard bath may be given. When the attack first begins it is well to clear the bowel of all irritating substances by a dose of sweet oil, to which (for an infant under two months) 15 drops of castor oil may be added. After this a little bismuth and chalk mixture is usually given by the physician, or small powders containing bismuth (about 1 gr.), once in two or three hours. The physician will usually determine the special remedy indicated after careful inspection of the stools.

Feeding in Indigestion.—If, therefore, curds exist in the stools, or the matters vomited be curdy, the indication would be to use some alkali or a small quantity of some thickening substance, as barley-water, or gelatin, or the milk may be peptonized.

Lime-water is the alkali most usually employed. Lime-water contains but about half a grain of lime to the fluidounce of water, so that at least a third of the feeding should be lime-water where it is used to correct indigestion. To make lime-water, a piece of lime about the size of the fist should be placed in an earthen vessel; about three or four quarts of water may be poured over this, strained thoroughly, and then allowed to settle. The water should be used only from the top of the vessel. It is better to filter it before use. The vessel may be kept filled with water so long as any of the lime remains in it, when dissolved it will be necessary to add more lime.

When lime-water cannot be obtained, a small powder of baking soda—three or four grains—may be added to the nursing-bottle. These rules apply when the baby is artificially fed. Should the baby be nursing from the breast, a teaspoonful of lime-water mixed with an equal quantity of boiled and filtered water may be given it before it is put to the breast each time.

Barley-Water and Oatmeal-Water.—Of the thickening substances used to help in the digestion of food barley-water is one of the best. To make barley-water, a gill of boiling water should be poured over a teaspoonful of washed pearl barley, finely ground in a coffee-mill. Boil for a quarter of an hour, then strain. It should be mixed with milk in the proportions required, two-thirds, a half, or one-third. A pinch of salt should be added to the mixture. Oatmeal-water is similarly made.

Gelatin is sometimes used instead of barley-water. A piece an inch square of plate gelatin is put into a half tumblerful of cold water and allowed to stand about three hours. This may then be turned into a teacup and set in a pan of hot water and boiled. The gelatin thus dissolves, and when allowed to cool forms a jelly, of which one or two teaspoonfuls may be added to a feeding.

Infants' Foods.—Of the various kinds of "infants' food," those in which the starch has been made into dextrine or grape sugar are the best. "Mellin's Food," "Horlick's Food," and "Eskay's Food" belong to this class. A teaspoonful of any of these dissolved in a little hot water—about a tablespoonful—may be added to the

milk for the feeding. Special directions for the use of each are supplied by the manufacturers with packages of the food. These starch foods cannot be well borne by a child before it is five or six months old, as a rule, because the secretion of saliva is necessary to the digestion of starch.*

Condensed Milk contains a large proportion of sugar, hence tends to make fat. It is not so nourishing as many other forms of food. Babies fed on it, though large, are generally far from strong, and are very apt to suffer from indigestion.

Usage in Woman's Hospital.—A careful regulation of the diet for the early weeks of infancy, with the addition of barley-water, lime-water, or gelatin, as indicated, in place of plain water, has been found most satisfactory in the care of infants in the Woman's Hospital. The use of water alone as a diluent is preferred. The modified milk preparations of the Walker-Gordon laboratory in Philadelphia have also been used with great satisfaction.

When curds are persistently found in the stools, especially with older children, it is thought by some to be of advantage to slightly thicken the milk by the addition of a little prepared wheat flour, barley, oatmeal, or Graham flour. *The use of cereals for the purpose, however, is rather questionable, especially with young infants.*

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* The prepared foods are not to be especially recommended, notwithstanding their efficacy in certain cases. Made by the quantity, their composition is of necessity often uncertain, and they must frequently be stale as obtained for use.

Flour Ball.—In using wheat the following recipe may be employed: [Tie a pint of dry wheat flour into a piece of stout muslin and boil nine hours; scrape off the outer crust and the inside will be found to be a dry ball; grate this as needed and add about two teaspoonfuls to a pint of water, which when boiled may be used in diluting the child's milk in the proportion desired, instead of using plain water.] After the sixth month, four teaspoonfuls may be used in place of two. Dr. J. Lewis Smith recommends allowing the flour, tightly tied up in a bag, to stand under water for about a week, the water being allowed occasionally to boil during this time. The flour is thus rendered more digestible.

Other Cereals.—Ground barley, oatmeal, or Graham flour may be boiled in water in the proportion of a dessertspoonful to the pint. An equal quantity of milk may be poured in while the water is boiling, and the whole may be boiled together from about twenty minutes to a half-hour and then strained. A pinch of salt should always be added. An ounce of cream and a little milk sugar may be added to this. Dr. Keating recommends this preparation as excellent for an infant after its fourth month, when he considers that it is best to make the use of the bottle alternate with the breast in the feeding of an infant, especially if the mother is not very strong.

Weaning.—If the mother has substituted the bottle for some of the feedings as early as at the age of six months, the child will not suffer from the process of weaning. In fact, a child often weans itself, refusing to

take the breast milk during the later months. The mother's milk, even in most favorable cases, is rarely sufficient nourishment for the child after it is a *year old.* If possible, no change in the child's food should be made in the summer months.

Substitutes for Milk.—When the child is very weak and vomits constantly,—milk, especially, seeming to disagree with it,—some of the following measures may be resorted to: small and repeated quantities of barley-water, gum-arabic water, or wine-whey may be used, a teaspoonful every half-hour or hour; sometimes the white of an egg may be shaken up in a bottle of warm water and a couple of grains of lactopeptin or Fairchild's *liquor pancreaticus* may be added, with a little milk sugar, and this may be given the child in teaspoonful doses. As the child's stomach grows stronger, teaspoonful doses of peptonized milk may be tolerated. No child should be fed too continuously on the prepared foods alone. Fresh milk should be used whenever possible, as a disease known as scurvy often arises from long use of stale preparations. The admixture of cream with water (1 part to 5 or 6 of water) has already been referred to as a substitute when milk is not well borne.

An occasional *drink of water* is essential to a baby, however young. The water should be boiled and kept air-tight to be free from germs. From a teaspoonful to a tablespoonful may be given occasionally during the intervals of nursing. Infants under four months

of age should be fed upon milk alone in some of its forms.

Milk Foods.—When breast milk cannot be had and cow's milk seems persistently to disagree, some of the "milk foods," as Carnrick's Soluble Food, Anglo-Swiss, Gerber's, or American Swiss, should be tried first before any preparation containing starch is used. Care must be taken to see that the preparations are fresh before using.

The Farinaceous Foods, as Blair's Wheat, Hubbell's Wheat, Imperial Granum, and the home-made preparations before described should not be used until the child is at least four months old, if at all.

Liebig Foods.—If in the use of farinaceous food the child's bowels become constipated, or it suffers from colic, or is restless at night and loses its appetite, some of the Liebig foods may be tried, as Mellin's Malted Milk, Lactated Food, etc. The directions for the use of these foods come with the various packages containing them, and are readily followed. Milk, as a rule, in some form or other, should be used in making up these preparations; otherwise they will not contain sufficient nourishment.

Constipation is not an infrequent occurrence in infancy. Its management consists principally in the use of mechanical irritants for stimulating the bowels; thus, a soap suppository, an injection of warm oil or water, gentle friction over the bowel, especially following the direction of the large bowel from right to left, are among

the most effective methods for overcoming this condition.

The soap suppository is made by taking a piece of Castile soap, about one inch long, and shaping it into a cone and making it very smooth, so that it will not be larger around than the end of the little finger. This should be gently insinuated about half its length into the bowel and held in the opening until it excites the bowel to act.

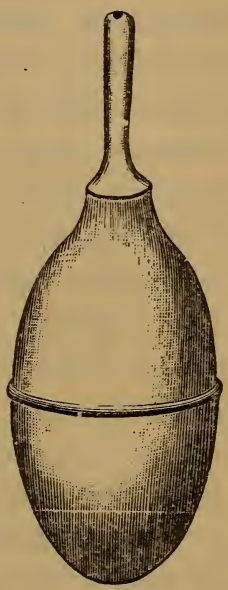

FIG. 41.—SINGLE-BULB SYRINGE.—(*Starr.*)

The bowel injection may be given by means of the single-bulb syringe, known as the "eye and ear syringe." The bulb holds about two tablespoonfuls of liquid. This may be warm cotton-seed oil, sweet oil, or warm water. The nozzle used should be small, smooth, and well oiled. It should be very carefully introduced into the bowel, being directed a little to the left side, and the bulb gently squeezed to force the contents into the bowel. It is best that the liquid should be retained for a little time before it is forced out. The keeping up of a slight pressure over the entrance to the bowel for a short time will aid this.

Rubbing the abdomen for about ten minutes (either with or without oil) in the direction of the large bowel—that is, upward on the right side as far as the border of

the ribs, then across to the left side and down this side to the pelvis, is often efficient in overcoming constipation.

Of medicinal measures, glycerin, gluten, or cacao-butter suppositories may be resorted to, or manna may be given; a piece the size of a pea in the child's milk one, two, or three times a day, or a spoonful of water sweetened with dark-brown sugar. Should the child be fed on artificial food, oatmeal water may be substituted for barley-water in the preparation of the food. If nursing, oatmeal water may be given it (1 tablespoonful) before each nursing.

Rupture, or Hernia, is a protrusion of the bowel through some weak point in the abdominal walls. It very often occurs at the navel and sometimes in the groin. The best treatment for the former consists in drawing together the edges of the hernial opening by means of a strip of adhesive plaster. A truss will need to be fitted for the other form.

Vomiting.—Babies vomit very easily, because their stomachs are placed more vertically in the body than when they grow older, and overfeeding will cause them to bring up the amount in excess of what the stomach can hold. This vomiting is, of course, not serious. Should the vomited matter be sour and curdy, the child seem to suffer from nausea, weakness, or fever, it indicates a condition of *indigestion* which should receive attention. The management would largely consist in the regulation of the quality and the quantity of the food,

as has just been said. It is best to withhold food for several hours, and modify its character when it is resumed, as described above. A spice-plaster over the stomach is often helpful. When the vomiting is due to overeating, the amount of food taken at one time must be regulated.

Worms.—There are three different kinds of worms which may exist in children, but young infants are troubled, as a rule, with but one kind, the *thread* or *seat-worm*. These look like little pieces of white cotton thread, and the stools should be carefully examined when suspected. They make the parts around the lower bowel very sore and produce intense itching. The parts should be kept very carefully cleansed, and a bowel injection of salt and water or of a little infusion of quassia may be given every day or so.

The tape-worm and round worm are found in older children.

Thrush is a disease due to want of care of the baby's mouth. If milk be allowed to collect on the tongue, it sours, and the presence of this acid favors the development of thrush, which is really a vegetable parasite. White patches may be seen on the soft palate, inside the cheeks, lips, and tongue. The attempt to rub off these patches causes bleeding. Gastric catarrh and diarrhea usually accompany this trouble. Care in cleansing the child's mouth after each nursing will prevent the occurrence of thrush. Its treatment consists in the use of an alkaline wash, as borax and water (twenty grains to the

ounce), or some antiseptic wash prescribed by the physician.*

Birth Marks—that is, the purplish-red patches or the moles sometimes found on a new-born baby—are not dependent in any way on the mental impressions of the mother. They can often be removed by treatment.

Red Gum is an eruption which comes out over the baby in the first or second week of its life. Sometimes these little points of elevation on the skin are *white*. The eruption is then called "white gum." These eruptions are due to changes in the skin and irritation from exposure to air, and are not serious. They rarely last over a week, although they may persist for several weeks in babies of delicate skin or poor digestive powers. They are also known as *strophulus*.

Blisters.—The occurrence of little blisters on the child's body, especially on the palms of the hands and soles of the feet, is a matter of more moment and should at once be brought to the attention of the physician, as also should sores around the finger nails. These indicate a condition of the blood for which the use of remedies prescribed by the physician will be necessary. The technical name for the rash is *pemphigus*.

Prickly Heat, or Miliaria, consists of pin-head sized,

* Boric acid (ten grains to the ounce of water) is very good. A teaspoonful of this may be swallowed by the child occasionally. Of late a solution one part hydrogen dioxide to eight of water has been much used. This followed by the boric-acid wash. After which a little bismuth subnitrate may be applied over the sore spots.

red elevations closely crowded over the portions of the body where there is most perspiration. It often results when children are too warmly dressed, or in hot weather. The treatment consists in the substitution of lighter clothing, with the relief of the skin irritation by the use of some powder, as camphor, one part to eight parts powdered starch. A little magnesium may be given by mouth.

Stomach Rash is a name given to an eruption known as *erythema*—a redness of the skin, with the occurrence of *pimples*—caused by indigestion.

Eczema is a disease which is much more troublesome. It may last months. There is usually an inherited tendency to some constitutional trouble; or improper food (especially starchy foods) or imperfect hygiene may be responsible for it. The surface is swollen, red, and moist; thick crusts often form. There is intense itching. Such cases should always be under the care of a physician. A saturated solution of salicylic acid, with the subsequent application of zinc ointment, often greatly relieves the distressing symptoms, and in time removes the rash.

Milk Crust consists of large, yellowish patches on the head, and is really dandruff. Castor-oil should be used to remove the patches, and this head kept cleansed with borax and water.

The Whites.—Sometimes a whitish, glairy discharge comes from the privates of little girl babies. This is simply the matter found there at birth. Occasionally

a little blood may be mixed with it, the result of an abrasion in the vagina, and may last a day or two. The nurse need not be afraid to remove this matter; in fact, if left, it causes irritation of the skin.

Suppression of Urine.—A healthy baby usually wets its napkin very frequently—it may be every hour during the day, and four or five times at night. Sometimes several hours may pass and yet the napkin remain dry. Either of these conditions may exist in health, being dependent largely upon the weather, the food, etc. If urine is not passed for twelve hours, the condition should be reported.

The nurse may try to make the baby urinate by using fomentations over the bladder and kidneys before reporting the matter to the physician. If a baby cries when urinating, a careful examination must be made of the water-passage to see whether there is any cause for irritation, as the urine may be irritating. In boy babies there is sometimes a very long narrow foreskin which tends to become adherent to the parts beneath it.

Phimosis is the name given this condition. For its management a nurse should be taught to retract the foreskin daily, oiling the surface beneath with a little castor-oil applied with a camel's hair brush or stick twisted with cotton. For irritating urine, giving the baby frequently a drink of cold water is usually sufficient.

Chafing.—The skin of new-born babies is soft and thin, and apt to become sore, especially when two surfaces rub. First, a little crack is noticed, next day this

will have widened until, sometimes, a large surface is left bare. To prevent this, proper care of the baby from the very beginning is important. Never use soap. Use warm water in washing it, either plain warm water or water with sufficient powdered borax in it to make it soft, and wash the part very carefully; wipe or mop with a soft cloth until *thoroughly dry*. Then, to prevent further rubbing, carry a piece of dry sterilized gauze into the crease between the rubbed surfaces, separating them. This should be changed whenever the baby's napkin requires changing.

When the skin is broken, some healing ointment is generally required. The following has proved very satisfactory: An ointment consisting of two drams of bismuth subnitrate to the ounce of zinc ointment, or, preferably, lanolin. A paste of equal parts of bismuth subnitrate and castor-oil is also useful for the purpose.

Boils.—When run down or suffering from chronic digestive troubles, babies often suffer from boils or other pustular eruptions. They may arise, too, from conditions of constitutional disease. When these need to be poulticed, the only kind of poultice admissible is an antiseptic poultice made by wringing out several folds of clean, soft linen or gauze in a hot saturated solution of boric acid and covering this with a piece of rubber tissue or paraffin paper to retain the heat. A little ointment containing ichthyol is good in the early stage. When pus exists, the boil should be lanced. Change of air with tonics will often do much to relieve this tendency.

Fever Blisters.—Children should be kept from picking these blisters, which may be treated by the application two or three times a day of the bismuth and zinc ointment or any healing ointment.

Itch is a contagious skin affection, usually found among the dirty, but may be contracted by the cleanest children. The sides of the fingers, the toes, the buttocks, may be covered with small pimples and irregular ridges where the parasite has burrowed. There is intense itching. The thorough and careful use of antiseptics under the direction of a physician will be necessary for cure.

Ringworm is also a contagious skin affection due to a fungous growth. The ring-like shape gives it its name. Sulphur and tar ointment make a good application for this. Ringworm of the scalp is very difficult to cure, and should be seen by a doctor.

Baby's Sore Eyes generally come about from some infection of the eyes through the mother's discharges at the time of the birth, or in lying-in hospitals one baby infects another. Hence, care should be taken to cleanse the eyes immediately after the delivery with a saturated solution of boric acid, or even clean, warm water, they may be prevented, as a rule, from getting sore. In many hospitals a drop of a two per cent. solution of nitrate of silver is dropped into the eyes after douching them well with boiled water at 98° F. Should the inflammation occur, however, the nurse must remember that the affection is contagious, through the matter which forms in the eye. This matter is capable of setting up an inflam-

mation elsewhere, as when a towel used about the eyes may produce a similar inflammation about the privates; a scratch or wound on the hands may be affected by it. The discharge from affected eyes is greenish-white. The poison it contains is not destroyed by drying; it catches and clings to the room, as the poison of smallpox. Hence, a nurse's hands should be thoroughly cleansed after washing the eyes, and the nails cleaned with a nail-brush. The cloths used in washing the eyes should be burned at once after using. The greatest precautions must be taken not to carry the poison. The nurse's chief care, apart from preventing the spread of the trouble, in such a case, would be to keep the eye or eyes free of the discharge by frequent cleansings with warm water gently syringed into the eye from the inner toward the outer angle, the lids being held everted by their gentle separation by the thumb and finger of one hand.* This washing may need to be done every hour. The baby's hands should be kept down by fastening a towel around the child's body, pinning it in the back. The baby may be held between the nurse's knees and its head inclined over a basin, which will receive the water from the washing. Another basin should contain the clear water to be used. Should only one eye be sore, in placing the baby in its crib, or laying it down at any time, the nurse should be careful to place it with the sore eye down, so that any discharge from it may not enter the other eye.

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* A warm saturated solution of boric acid is even more efficacious.

Any further irritation, as of a strong light, should be prevented by keeping the baby in a darkened place. Want of attention in these cases may cause a child the loss of its sight. A room occupied by a baby with sore eyes must afterward be carefully disinfected. When the eyes are inflamed, the application of ice-cloths every two or three minutes, kept up persistently until the inflammation subsides, is most efficacious. A piece of ice with small squares of linen laid upon it can be kept at the side of the crib so as to be ready for constant use. The cloths removed should be burned.

There is a law in many States, Pennsylvania included, requiring nurses or mothers having an infant in charge who is not under the care of a medical attendant to report promptly to the Board of Health any appearance of inflammation about the eyes.

Snuffles, or a Cold in the Head, shown by watery eyes, sneezing, stopping up of the nose, hence difficulty in nursing, should be managed by keeping the nose cleaned out by means of soft linen twisted into a cone, greasing the nose well afterward with a little oil by carrying it up the nostrils on a twist of cotton, greasing the outside of the nose between the eyes, and keeping the baby warm. If the baby has no hair, the head may be kept warm by a little mull (or in winter thin flannel) cap. Sometimes a little niter water or some tonic may be required.

Running at the Ears is generally very serious in new-born babies, especially when the discharge is matter

or blood. Some trouble with the brain may be threatened, hence the physician should be told of it as soon as it is noticed. Of course, the discharge entering the ears at the time of the birth should be carefully excluded from this disorder.

Earache.—A persistent cry, with the raising of the hand constantly to the head, will often indicate earache. No medicine should be dropped into the ear and no poultice placed over it. The pain is often relieved by holding a hot water bag or bottle to the ear. Relief is also often obtained by syringing the ear with water as hot as can be borne. This should be done frequently, and the ear kept covered in the intervals with hot, dry flannel.

The Breasts of new-born babies often swell. Generally this occurs about the seventh day or during the second week. Occasionally they gather, and must then be lanced by the physician. Nothing should be done for this swelling, except to see that the clothing is loose. It disappears in a few days, as a rule.

Scalp Tumors.—The same may be said of swellings on the head or about the face, which are due to pressure during the birth. One form of scalp tumor may last several weeks before its entire disappearance. The latter is the result of temporary injury to the bone, and not simply the ordinary swelling which comes from interference with the circulation of the blood in the soft tissues of this portion of the scalp. The name *blood-tumor* (*hematoma*) is applied to this. No active treatment for its removal is necessary.

Deformities.—A child may be born with some deformity, as hare-lip, or cleft-palate, or club-foot, or extra fingers and toes, or there may be some malformation about the external organs of generation or the bowel. The bowel passage may be closed, or there may be no opening from the bladder. Whatever the deformity may be, the nurse should avoid letting the mother know anything about it until the physician has told her of it. The shock produced by the knowledge may do the mother much injury; hence the physician should bear the responsibility of making the announcement. A nurse will need considerable tact in managing this, as the mother is apt to ask to see her baby very soon after its birth. An excuse may be made by stating the necessity for washing and dressing the child first, or it may be asleep and the nurse hesitate to disturb it. A child with hare-lip or cleft-palate will need to be fed, as a rule, with the spoon or a dropper, as it cannot nurse.

Tongue-tie.—Quite frequently the bridle beneath the baby's tongue is too short, and interferes with the free movement of the tongue. This is called "tongue-tie." It may prevent the child's nursing, and thus interfere with its nutrition. If the baby can extend the tip of the tongue beyond its lips, it is not probable that there will need to be anything done, as the baby ought to be able to suck a good nipple with ease. If the nurse should introduce the tip of her little finger into the baby's mouth and allow the child to draw on it for a few

minutes, she can tell whether the act of sucking can be properly accomplished. Should it not be able to suck, the attention of the physician should be called to the matter, as the bridle will have to be nicked—an operation following which there may be considerable loss of blood, hence it should not be attempted except by a physician.

Bleeding from the Cord or navel string may occur within a few hours after birth. It may be that the cord has not been tied sufficiently tight, or there may have been a very thick cord, which, in shrinking, has loosened the ligature. If, after tying, the cord has been looped back upon itself and tied in a single double bow-knot, this may be untied by the nurse and fastened more tightly, so that the bleeding may be controlled, or another ligature may be thrown around the cord a little nearer the body of the child than the first one. Should this not check the hemorrhage, the nurse should hold the cord firmly between the thumb and finger, making compressions until the physician, who should be sent for, arrives.*

Falling of Cord.—The cord commonly falls off about the fifth day. The process of ulceration, by which it

* Bleeding from the base of the stump after the cord has fallen is a more difficult condition to manage. The physician needs sometimes to control the hemorrhage by a ligature drawn beneath transfixion pins. The nurse must keep up pressure over the site until the doctor comes. If this is a simple oozing, a free application of powdered tannic acid with a compress is all that is necessary.

falls off, leaves an open surface on the child's body which offers an avenue for *septic infection.* Great care should therefore be taken that the nurse's hands and anything else that comes in contact with this surface are perfectly clean. Should any moisture exist about the stump, the use of the antiseptic powder of salicylic acid and starch, before spoken of, or some other drying powder of the kind, may prove useful. It is necessary, also, to see that the dressing used is thoroughly antiseptic. When infection does exist, it shows itself in the occurrence of inflammation around the navel or some other part of the body; the child loses flesh, has fever, becomes puny and emaciated, and abscesses form in various places. In the majority of cases it dies, not having sufficient vitality to survive the poisoning.*

The physician will, of course, prescribe the treatment for such a child; the nurse will be required to see that these directions are faithfully carried out, and especially that the child gets all the nourishment and stimulation required.

Umbilical Vegetations are either soft, jelly-like growths, or, what is more common, hard protuberances sometimes the size of a hickory-nut. They are not painful and seldom bleed. The physician sometimes removes them by ligature. The softer forms may be touched with caustic and thus made to shrink. When an ulcer exists at the place from which the cord dropped,

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* Sometimes the inflammation takes on the character of erysipelas.

dry antiseptic dressings or a drying powder, as boric acid and zinc oxide or a little tannic acid powder should be kept applied.

Jaundice.—A peculiar yellowish coloration of the skin is to be noticed with babies a few days after the birth. This disappears, as a rule, by the end of the second week, and is due to changes in the circulation.

Should the jaundice be very marked and seem to persist, warm baths once or twice a day, with gentle friction over the liver with soap liniment, helps, with free action of the bowels, to overcome the condition. Jaundice of the new-born baby is sometimes the result of disease of the liver. The color is then very marked. The baby grows thin rapidly and appears sick. The stools are apt to be clay-colored. When the child is suffering from blood-poisoning, the peculiar coloration of the skin is due to this cause.

Bühl's Disease is an obscure disease of new-born babies, thought to be due to fatty degeneration of the internal organs. It results fatally, as a rule, within the first few days. There is a tendency to hemorrhage from various parts of the body.

Bleeders.—In some families, known as "bleeders," the tendency to hemorrhage may be transmitted to the child, particularly if it be a boy. It is necessary to watch for any such tendency very closely. The hemorrhages may occur from any open surface on the body, or from the mucous surfaces. Tarry stools occurring after the normal bowel passages have been established would be an indication of intestinal hemorrhage. Some-

times the hemorrhage is in the brain and the child dies with symptoms of brain trouble.

Convulsions may occur in very young infants at varying periods after their birth, according to the cause which excites them, as injury during labor, indigestion, brain trouble, or other causes. The convulsive seizure is generally preceded by twitching of the limbs, a rolling-up of the eyeballs, so that a large part of the whites of the eyes is seen, the thumbs are drawn into the palms of the hands, and the fingers tightly clasped over them, or the toes may be turned upward or drawn downward. During the convulsion the child grows rigid.

When the attack comes on the nurse should quickly undress the child and place it in a warm bath. A tablespoonful of mustard added to the water will help to stimulate the skin, and the convulsion will gradually subside. The child, on its removal from the bath, may be wrapped in a heated blanket, and allowed to perspire freely. On the recurrence of the convulsion, the same measure of placing the child in the bath should be resorted to, until the physician comes and institutes such other treatment as he may think proper. The use of an ounce of milk of asafetida by bowel is often efficient in quieting nervous irritability.

Bruises, the result of falls or blows, should be treated by the repeated application of hot or cold compresses. This will relieve pain and prevent swelling and the black and blue discoloration of the skin which would otherwise result.

The occurrence of a fall or blow should always be at once reported by a nurse, as the child should be carefully examined for the discovery of any injury the serious consequences of which may be averted by prompt treatment. The occurrence of paleness or vomiting after any such accident is a serious symptom, and should receive immediate attention by the physician.

Fever.—A hot, dry skin may accompany various of the disorders of infancy, notably inflammatory conditions of the digestive organs and of the lungs. The normal temperature of a new-born baby is 99° Fahr., the pulse 140, the respiration 44.

Should the child seem to be ailing, its temperature should be taken. A clinical thermometer may be held the requisite number of minutes in the groin or in the folds of the neck. Some slip the bulb of the thermometer into the rectum. Should the temperature be raised, the pulse rapid, and the respiration hurried and difficult, some *lung trouble* probably exists. Pneumonia is a very common disease with infants. A catch in the breath, noisy breathing, a distention of the nostrils on taking an inspiration, would indicate the same thing. The frequent rubbing of the chest with some counter-irritant liniment, as St. John Long's liniment, the use of the cotton-jacket for the protection of the chest, and, if the child is very feverish, sponging it frequently with tepid water, and the use of a drop of sweet spirits of niter in a teaspoonful of cold water once in two hours or oftener, will constitute the nurse's management of the case until

the doctor has seen the baby and laid down his plan of treatment. *The cotton-jacket* is made by taking a high-necked, long-sleeved merino vest a size or two larger than would be needed by the baby for ordinary wear, opening it down the front, and fastening tapes an inch or two from each edge in front, by which the jacket may be closed. The inner surface of this vest, back and front, should be quilted with sheep's wool or cotton batting, the outer surface with oiled silk or oiled muslin. This makes a very warm covering for the chest. Some physicians employ compresses wrung out in cold water underneath the lined vest, renewing them frequently; others prefer using warm flaxseed poultices.

Infectious Diseases, such as scarlet fever, measles, etc., are very rare under the age of one year, especially under six months, therefore do not need to be considered here. Occasionally when the mother has the affection or has been where these diseases are immediately before or at the time of the baby's birth, the child will have the disease or develop it. The treatment must be managed by a physician.

Cyanosis, or "blue disease," comes from the imperfect closure of an opening which exists in the heart before birth. The baby is called a "blue baby," and is very delicate in consequence of this imperfection in its circulation. Such babies generally die, if not during infancy, some time during early childhood. With great care they sometimes live, and the opening in the heart gradually closes up. The special care required is to

keep the child warm and to handle it very carefully, so that it may be subjected to no jar or nervous fright. The child should be kept lying on its right side, or on its back, in order that there may be as little interference as possible with the action of the heart, and that the tendency of the blood to flow through this opening in the upper chambers of the heart—from right to left—may be overcome.

Rickets is a disease of the bones—the result of poor nutrition. There is not sufficient deposit of earthy matter in the bones, hence they remain too soft and are subject to all kinds of distortions in consequence of this. The child may be bow-legged and is stunted in its growth, curvatures of the spine may exist, or an unnaturally large head, known as hydrocephalus, or "water on the brain."

Scrofula is a term applied to a form of tuberculosis common among children. It shows itself in the tendency to enlargement of the glands, especially of the neck—the occurrence of abscesses and sore and weak eyes. Such cases should always be under the care of a physician.

Marasmus is a term used to indicate a condition of persistent wasting in a child from whatever cause. The child becomes excessively thin, the skin yellowish, the face wrinkled. Tuberculosis, syphilis, persistent diarrhea, and vomiting are apt to produce it.

The baby having this disease is very weak, cannot hold up its head well, perspires very freely, especially

about the head. The complexion is very white. The baby has constant trouble with its bowels, having green stools nearly all the time. The opening in the front of the head is depressed and the child seems to waste.

As the baby grows older, unless well cared for, the evidences of disease increase, the joints are enlarged, the baby cannot support itself on its limbs, its teeth are slow in coming, etc.

The mother can do much for the health of her child, while still carrying it, by a careful regard for her own general health. After the baby's birth it should be kept well nourished, to overcome any tendency to disease. Salt baths, oil baths, and the use of tonics ordered by the physician, as cod-liver oil, together with careful attention to the quality and quantity of nourishment, will do much to prevent the progress of any wasting disease.

Water on the Brain, or Hydrocephalus.—An enlargement of the head is sometimes found even with very young infants, due to an accumulation of fluid within the skull, which results from a form of chronic inflammation. In mild cases the mind is not affected, and the child seems to outgrow the condition.

Paralysis of one side of the face or of an arm sometimes results from pressure during the birth. The baby usually recovers from this in a few weeks. Another form of paralysis sometimes occurs with infants which is due to disease of the spinal cord. These cases require intelligent medical supervision.

Vaccination.—The question often arises as to how

early a baby should be vaccinated, particularly if small-pox be prevalent. As a matter of experience, it is found that the vaccination does not "take" well before the third month, though if a younger baby is to be exposed to the poison, it would be well to have it vaccinated. Vaccination should be avoided, if possible, when the baby's health is run down from any cause, also at the time of teething. A peculiar and distressing form of rash sometimes occurs, or there is a great deal of inflammation following the vaccination, leading the parents to imagine that the baby has been poisoned by the virus used.

Care should be taken to see that the child does not scratch the sore, and that it is kept free from the rubbing of the clothing. No grease should be applied unless directed by the physician. When there is much redness and intense itching the physician may direct some powder or ointment to be applied to allay this.

A soft, clean, linen handkerchief can be bound over the sore, and a loose-sleeved garment used to prevent the irritation of rubbing. Applications which are not aseptic, when used about such a sore may induce blood-poisoning.

An insight into the frailty of human life in its earliest days proves how much the world owes to the faithfulness of mothers and nurses, and should be a stimulus to scientific research in the discovery of improved methods for the management of infancy.

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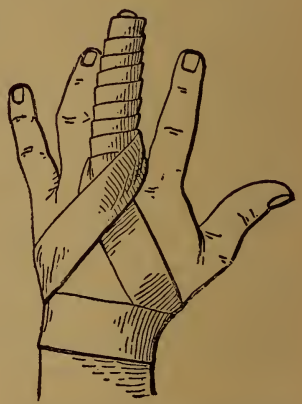

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